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PAPER TRADE JOURNAL

Vol. XCVII NOVEMBER 30, 1933 No. 22

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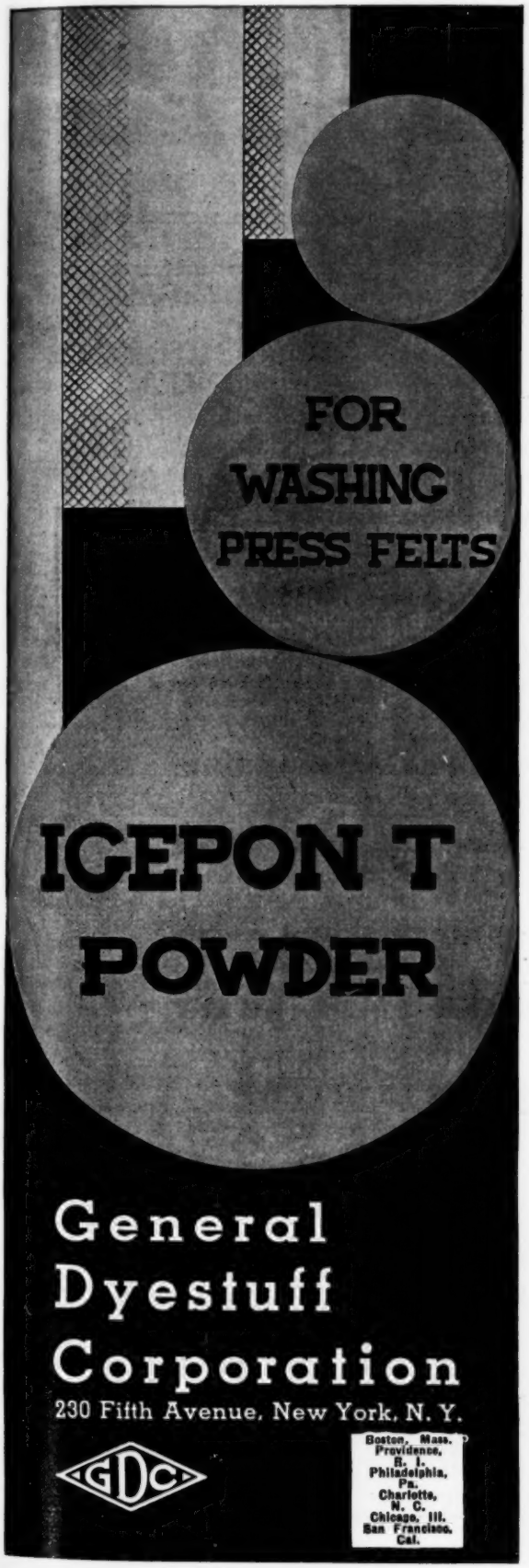

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ESTABLISHED IN 1872

PAPER TRADE JOURNAL

With Which Is Combined

PAPER

Vol. XCVII, No. 22 — Thursday, November 30, 1933

International Greatly Increases Employment

Since June the Number of the Company's Employees in the United States Has Risen from 10,743 to 13,468 or 25 Per Cent and the Pay Roll Has Increased from the Annual Rate of $11,760,000 to $15,645,000 or 33 Per Cent—Two Wage Increases Have Been Made and All Mills Are Working the Maximum Hours Under the Paper Code

The International Paper Company reports a substantial increase in employment in its operations in the United States, and an even greater increase in payroll in the past five months. Since June the number of employees has risen 25 per cent, or from 10,743 to 13,468, and the company's payroll in that period has increased from the annual rate of $11,760,000 to $15,645,000, or 33 per cent. All the mills of International Paper Company and subsidiaries in the United States have been covered in these figures.

Two wage increases have been made by the company; one in July and one in October. At the same time the company put into effect at all its mills the maximum working hours provided for in the code for the paper industry which had been signed by President Roosevelt on November 17 and which became technically effective on November 27.

Volume of business of the company has greatly expanded in the past six months and is reflected in the report of International Paper and Power Company for the third quarter, recently made public, which showed earnings available for dividends for the first time in any quarter since September 30, 1931.

Preparing to Administer Paper Code

The American Paper and Pulp Association, the official "Paper Industry Authority," is now busily preparing to administer the Code of Fair Competition for the Paper and Pulp Industry, which went into effect November 27.

It has been announced that, in accordance with Article VII, each member of the industry shall file with the Executive Authority of its Division or Divisions, complete schedules of prices, terms and conditions of sale for domestic consumption, on or before December 27, 1933.

As questions regarding the provisions of the various articles embodied in the Code of Fair Competition arise, interpretations are being given by the Authority to the industry.

Printed copies of the General Code and Subordinate Divisional Codes of Fair Competition for the Paper and Pulp Industry, as approved by the President of the United States, November 17, 1933, may be obtained from the American Paper and Pulp Association, 370 Lexington Avenue, New York, price ten cents, plus postage.

Dr. Herty Appointed Deputy Administrator

WASHINGTON, D. C., Nov. 28—The National Recovery Administration has announced the appointment of Dr. Charles H. Herty, widely known chemist, as Deputy Administrator. Dr. Herty has been assigned to Division 3, in charge of codes for the chemical industries.

Dr. Herty is a native of Milledgeville, Ga., and a graduate of the University of Georgia and Johns Hopkins University. He also studied at Berlin and Zurich.

For many years Dr. Herty was professor of chemistry in the University of Georgia and the University of North Carolina. He has edited chemical publications, engaged widely in chemical association activities and served as consulting chemist. Since 1928 he has made his headquarters in New York City as industrial consultant. He is a member of many chemical and scientific societies in this country.

Since 1931 Dr. Herty, among his activities, has been director of the Division of Pulp and Paper Research, Georgia State Department of Forestry, in which capacity he recently saw an old dream come true as wood pulp made from Georgia pine passed its final tests and proved not only suitable for newsprint manufacture on a full commercial scale but in some respects superior to spruce pulp. The November 20th editions of nine Georgia daily newspapers were printed on newsprint paper manufactured from Georgia pine pulp.

In order that there should be no ground for doubt or skepticism, Dr. Herty took Georgia pulp to a large Canadian newsprint plant, primarily interested in manufacture from spruce, and had the final tests made there and the first Georgia pine newsprint run off.

I. P. Co. to Make No Price Change

The International Paper Company on Monday of this week announced that it has sent notices to its news print contract customers under which there will be no change in the net cost of their paper up to April 1, 1934. It is further stated that any change in the net cost of paper after that date will be made only after careful consideration of conditions prevailing in the paper and publishing industries.

The present net cost is stated as $40 a ton for New York and Chicago.

Canadian News Print Paper Exports Expand

October Statistics Show Substantial Gain in Volume and Marked Drop in Value, Compared With Corresponding Period Last Year—Value of Wood Pulp and Screenings Higher —Montreal Experts Analyze News Print Made From Southern Pine.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., November 27, 1933—The effects of the recent price cuts on news print are sharply illustrated in the figures for the October exports of that commodity, these showing a substantial gain in volume and a marked drop in value. Total news print exports for the month amounted to 3,438,939 cwt., as compared with 2,978,691 cwt. in October, 1932, but the value last month was $6,285,008, as compared with $6,754,504 for the smaller volume in October of last year.

For the twelve months up to October 31 last the value of news print exported has been $69,231,531, as compared with $87,769,127 in the corresponding twelve months of the previous year. Exports of sulphite pulp for the month were valued at $1,235,478 as compared with $958,412 in October, 1932; and of mechanical wood pulp $221,109, as compared with $423,863 in October, 1932; the total of all wood pulp and screenings exported was valued at $2,214,662, as compared with $1,791,329 in October, 1932.

Pros and Cons of Southern News Print

A number of experts in Montreal have tested a sample of news print manufactured at Thorold from southern pine, and have compared it with paper made from Canadian spruce on the same machine. While agreeing that the former is the best yet produced from the pine tree, they pronounced it greatly inferior to the product from Canadian spruce, one authority, pointing to its coarser fiber, expressing doubt that it could ever be developed into as good a paper as the Canadian product.

Before considering the southern pine possibilities, it is well to establish, according to an authority here, those factors which have combined to make Canada, and particularly Quebec, and Ontario, great centers of news print production. An adequate supply of wood of the right sort is combined with an unlimited amount of cheap power and relatively close proximity to markets for the product.

It is in this light that the establishment of a news print industry in the south must be considered even after it has been shown that news print of a first class calibre can be produced from the pine. Mills must be built, requiring a large capital expenditure; sources of cheap power must be established as well as adjacency to markets, from the point of view of freight costs.

"The matter of fixed charges and cost of wood are the two great factors in news print," this authority is further quoted as saying. "In regard to the first, the establishment of mills in the south would naturally entail the setting up of a substantial fixed cost, even after giving consideration to the fact that construction costs and maintenance in the south would be well under that in this country, where the elements provide an obstacle. It might be well to consider at this time that the depression plus the vicissitudes brought on the Canadian news print industry by over-capitalization and over-expansion have brought in their train numerous reorganizations that have resulted in a number of cases in reducing in important measure fixed charges.

"Next we come to the matter of woods costs, and here we are confronted with something, so far as the south is concerned, that must be confined to the realm of conjecture. It is generally recognized here that the cost of wood delivered to the Canadian mills ranges between $8 and $10 a cord. Dr. Herty, who is responsible for the southern pine experiment and who is the moving force in the movement to establish a news print industry in the south, estimated the cost of southern pine at $3.50 a cord delivered to the mill. Such a spread naturally provides a tremendous advantage for the users of pine, but in well-informed circles here it is estimated that use of pine on a large commercial scale for news print would very substantially increase the price and narrow the spread.

"Another and important factor that is stressed by proponents of the use of southern pine is the rapid growth enjoyed by these trees as contrasted with spruce. This can very readily be counted as a most important long-term factor, but for the next decade or so should be considered of relatively little importance, if consideration is given to the fact that in this country there is a quantity of 60-year-old spruce standing sufficient to provide for all needs. Southern pine for news print uses, it is estimated, should be approximately 15 years old, but it is indicated by Dr. Herty that younger trees can be used to advantage.

Broadly speaking, there appears here general recognition of the potentialities of news print manufacture from southern pine, but various reasons are advanced that combine to make reasonably remote the early development of serious competitive danger to the Canadian industry from that source. These include the view that the news print paper thus far produced is substantially inferior; that it has not been sufficiently established that costs would be very substantially below those of the Canadian producers; and that mills would need to be financed, requiring large amounts of capital. However, while large scale production in the South may be a long time off, it is recognized that even the creation of a small unit would reduce a market already inadequate for the productive capacity of the industry.

Murray Bay Reports

The ground wood pulp mill of the Murray Bay Paper Company, which was taken over by the Abitibi Power and Paper Company on a long term lease, is reported here to be reverting to the possession of Donahue Brothers, Ltd. It is said here, though not confirmed, that a cash consideration of $46,000 has figured in the transaction. The Abitibi company has never operated the mill.

May Complete Richvale Paper Mill

A plan to complete the plant of the Pacific Coast Pulp and Paper Company, at Richvale, Cal., on which construction was started several years ago, was presented at the meeting of the board of directors of the Chico Chamber of Commerce recently.

The plant will be speeded to completion as soon as necessary financial arrangements have been completed, according to representative stockholders. V. K. Sturgis of Oakland, plant representative, said the R.F.C. is assisting in financing the plan on a dollar for dollar basis with private investors. The chamber of commerce was asked by Mr. Sturgis to present the plan to business men.

Boston Paper Market Conditions Improve Slightly

Demand for Various Standard Grades of Fine Paper Better, Despite Uncertainty of Currency Situation—Request for Kraft Wrapping Paper Continues Fairly Persistent —With Paper Board Operations Curtailed, Waste Paper Rules Quiet.

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., November 27, 1933.—A slight improvement in the wholesale paper market in general developed during the last week, at least in the fine paper division, although the uncertainty in regard to the currency situation prevented some sales from being consummated. There were a few more inquiries from those who were to have more printing done than they had previously. One dealer in fine paper stated that business had been "pretty good for the last few weeks," another "about the same, perhaps a little improvement," another, "pretty good, a little pickup." Others reported business as fair and a few as slow. Reports from the wrapping paper trade indicate a fair volume of business. In box coverings the movement was rather slow.

The paper stock market was rather slow. The Robert Gair Company, Inc., operated only two days last week, although Bird & Son, Inc., continued on the three-day schedule. No 1 mixed papers declined still lower, to .20 @ .25 from .22½ @ .27½, a drop of .05 within two weeks. Old newspapers, however, held at .37½ @ .42½. No. 1 books, heavy, went off to .85 @ .95 from 1.00 @ 1.10; No. 1 books, light, to .65 @ .75 from .75 @ .85, and manila paper to .75 @ .80 from 1.05 @ 1.10. On account of the rate of exchange, quotations on foreign gunny bagging have been much higher, but within the last few days this commodity has gone down in price. Even so, foreign gunny No. 1 was quoted at 1.50 @ 1.60 compared with a former 1.20. Domestic gunny No. 1 advanced to a high of 1.10, with 1.00 as the minimum, against a flat price of 1.00 previously quoted. It is stated in the market here that until a change in the money situation takes place, business in foreign gunny will not be very active. New and old domestic rags and foreign rags remain unchanged in price.

Bid for Wheelwright Mill Declined

In the Motion Session of Suffolk Superior Court Thursday, Judge Grey declined to approve the sale of the mill and its stock of paper at Leominster, Mass., owned by the Geo. W. Wheelwright Paper Company, at an offer of $80,000 from a customer whose name was not given. In his refusal, Judge Grey sustained the opposition of Receivers Wheelwright, Woods and Alpert. The bid was presented by Attorney Feingold, counsel for the North American Coal Corporation, a creditor of the Wheelwright company. It is reported that the coal company, which has persistently sought liquidation of the property, obtained the offer through friends in New York City.

Receiver George Alpert, in opposing acceptance of the bid, stated that in the monthly report now presented, the third since the decree of the court in August requiring monthly submission of balance sheets, the company had made a profit of $1,900, covering part of October and November. This report showed the second profitable month. Mr. Alpert added that the company's inventory of paper alone is valued at $206,000 replacement cost and inasmuch as 42 per cent of the Hardwick paper was realized in gradual liquidation, the same percentage would mean a greater value for the mill inventory than the bid for mill and inventory together. Judge Grey sustained this view and urged further attempts to sell the property at any reasonable price. Mr. Alpert stated that there was about $36,000 on hand and offered to use $25,000 of this amount for a dividend to preferred creditors. Some $11,000 of this amount must be used for taxes to the town of Hardwick, so that preferred creditors will receive an 8 per cent dividend which Judge Grey ordered paid immediately.

News of the Trade

A joint meeting of the Arnold-Roberts Company and the Storrs & Bement Company, attended by salesmen of both companies, was recently held at the office of the latter concern in regard to the Buckeye Cover Color Guide of the Beckett Paper Company of Hamilton, Ohio. John H. Brewer, general manager of Storrs & Bement Company, presided. The speakers included Carl Greer, author of the Buckeye Book of Direct Advertising; Guy Beckett, president, and Faber Birren, author of the Color Guide.

The Storrs & Bement Company has been mailing to customers a portfolio of Worthy papers, containing twelve pieces, together with the Storrs & Bement announcement and price-list.

Rutter & McNaught, Inc., have added to their lines American Embossed Cover, made by the American Writing Paper Company, Holyoke, Mass.

Harrie E. Waite, of John Carter & Co., Inc., attended a meeting of the Eastern Branch of the Eagle-A Announcement Association, held Saturday at the office of the Kent Paper Company, New York. The association is composed of merchants selling the Eagle-A Announcement Papers, made by the American Writing Paper Company.

Charles W. Morrison, manager of the New England board sales of the Robert Gair Company, well known in the trade here, has returned to his office at Haverhill after a week's illness.

Leo Gaughn, sales manager of the Wabash Coating Division of the Container Corporation of America, called on the Poinier-Carmer Company, New England representatives of the concern last week.

Joseph S. Miller, secretary and purchasing agent of the New Haven Pulp and Board Company, New Haven, Conn.; Allen B. Helfrich, of the Orono Pulp and Paper Company, Orono, Me., and Mr. McDowell, of the Carew Manufacturing Company, called on the trade last week.

The Liberty Paper Box Company, Boston, has been incorporated with a capitalization of $1,000. There are 100 shares, $10 each. Ellis H. Russell is president, Mona Sidman, 31 Mallon Road, Dorchester, Mass., treasurer, and the third incorporator is Betty Shor.

Farnsworth Co. Files Petition

[FROM OUR REGULAR CORRESPONDENT]

WATERTOWN, N. Y., November 27, 1933—A petition in bankruptcy has been filed by the Farnsworth Co. The petition was filed in Federal court and disclosed liabilities of $143,491 and assets of $52,104. The assets include $46,519, balance due on contract, a considerable portion of which is of doubtful value, according to the treasurer of the company. Among the creditors is the Bagley & Sewell Company, which holds a claim for $137,699.

Chicago Paper Market Displays Stronger Trend

News Print and Ground Wood Paper Interests Anticipate Genuine Improvement Under Recovery Code—Demand for Fine Papers Fairly Persistent—Tissues in Satisfactory Request for Season—Coarse Wrapping Paper Section Steady to Firm.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., November 27, 1933—The Chicago paper market is busier than a beehive, most of the activity centering around the probable effect of the paper code. Mill representatives are giving much consideration to the adjustments in wage scales and working hours that will have to be made. The entire market is expecting a hectic session as the provisions of the code go into effect. However, optimism is the primary characteristic of all comments. The better feeling, as the code hoves in sight, is reported partly due to the fact that things can be little worse and that there is a definite possibility of genuine improvement. Particularly do the ground wood and news print people feel that something better is in sight.

Meanwhile, market wise, business improved somewhat, as belated buyers realized that the code was soon to be an actuality. Specifically, the paper board mill representatives' reports were fairly optimistic. Fine papers were only fair. Books and covers were awaiting the new deal with a considerable amount of interest. A local situation in sulphite bonds was reported to be causing some excitement. Tissues were reported in good demand and a better outlook was reported for other grades. Coarse papers in general held firmly market wise, with all eyes toward later developments. The entire outlook is held good, far above conditions of a year ago, and the advance in prices expected all along the line is awaited by the Chicago representatives of the entire list.

J. D. Swigart Heads Community Drive

A gigantic city-wide effort to put over the Community Fund Drive of the Allied Charities of Chicago has drawn a large number of paper mill and distributor executives into the ranks of workmen. Relief services, clinics, hospitals, work agencies, protective agencies and others are expected to be materially benefited by the big drive.

To J. D. Swigart, always a leader in community enterprise, goes the job of supervising the entire effort to raise funds within the paper and allied industries groups. The Swigart Paper Company executive has a veritable army working under him. He is also handling the solicitations from Chicago paper distributors.

The coarse paper group is headed by Mr. Gall, of Gall & Ingalls; the waste paper division by T. F. Moody, of the Pioneer Paper Stock Company; and the Corrugated Box Division by C. J. Keady, of the Container Corporation of America.

The folding box group is being led in solicitation work by A. G. Ballenberg, of the Morris Paper Mills; while George Gaw, well-known head of the Gaw-O'Hara Envelope Company, is handling the paper book and school supplies group. Fred Wagner, of the Schultz-Illinois Star Company, is handling the job for the set-up box division of the entire industry.

Mill representatives are headed by Earl Runcie, of the Champion Coated Paper Company. Working with him in the carrying out of this enormous task are the following men: J. H. Coy, Flambeau Paper Company, who had the chairmanship job last year and is no less active in the 1933 drive; Joe Heyer of the Cherry River Paper Company; R. C. Swan, Champion Coated Paper Company; Richard Cook, International Paper Company; R. C. Johnson, Northwest Paper Company; B. B. Fisher, Bergstrom Paper Company; W. C. Talbot, Riegel Paper Corporation; and F. H. Fieweger, Acer & Co., Inc. These men, busy as they are, are doing a remarkable job under the leadership of Mr. Swigart in raising money for a meritorious cause.

Chicago Paper Association Activities

The first meeting for the newly-elected officers of the Chicago Paper Association is to be held in the English room of the Blackstone Hotel next Tuesday evening, November 28. At that time the association will probably decide to continue its excellent work of contacting with manufacturers by specified groups within the organization itself. The association has the following chairmen and committees, known as the Commodity Committees. These groups have done outstanding work during the year and their appointments will probably be held over during the coming twelve months period. They are as follows:

Bag committee, James S. Danehy, Schwarz Paper Company, chairman; Corrugated, M. A. McNulty, McNulty Paper & Twine Corporation, chairman; Gummed Tape committee, Norman Stone, J. H. Stone & Sons, chairman; Toilet and Tissues committee, J. H. D. Murphy, Commonwealth Paper Company, chairman; Twine committee, John Daily, Pilcher-Hamilton-Daily Company, chairman; Kraft committee, Leo Altholz, Inlander-Steinlerx Paper Company, chairman, and Specialties committee, Henry Thoms, Peerless Paper Company.

Each of these groups meets regularly, carefully going over plans and conditions, and then following the procedure of meeting with the manufacturers of the various specified lines to work out problems together. For example, the Twine committee, under the direction of Mr. Daily, met on November 23 with twine manufacturers to review important problems and to create a closer understanding between the jobbers and manufacturers. The program has been decidedly successful and will undoubtedly be a feature of the 1933-34 program, accentuated in importance by the code of fair practices covering the coarse paper industry.

News of the Trade

R. C. "Bob" Butterworth, executive of the Champion Coated Paper Company, with offices in the Conway Building, returns next Monday after a two weeks trip in his southern and southwestern territory.

Another new office in Chicago is that of Artcote Papers, Inc., of New Jersey, the firm having established a sales office in the Merchandise Mart, Room 1103. The company manufactures non-tarnishing and rub proof gold, silver and copper metallic papers and is carrying a compact and representative stock.

New lines added recently by the James White Paper Company and recently announced include Rockbottom Enamel Book; Inca Cover, Samarkand Cover, Tribal Cover, Silverflake and Goldflake text and Recondite Cover. Kimberly-Clark manufacture the Recondite Cover; Silverflake and Goldflake text are products of the Strathmore Company and the Beveridge Paper Company manufacture the popular new line of Samarkand Cover, according to reports.

Activities of Fox River Valley Paper Mills

With Paper and Pulp Codes Now in Effect, More Settled Conditions are Anticipated in Wisconsin—Manufacturers Have Already Readjusted Working Schedules and Wages—Marathon Paper Mills Co. Buys Saw Mill at Ironwood, Mich.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., November 27, 1933—Purchase of the Scott and Howe Company saw-mill at Ironwood, Mich., by the Marathon Paper Mills Company, Rothschild, Wis., has been announced through J. S. Landon, Michigan representative of the Marathon mills. The R. Connor Lumber Company, Marshfield, Wis., is operating the mill at present but the date has not been set when it will be turned over to the new owners. The Marathon company has one of its paper mills nearby at Ashland, Wis., and also has large timber holdings in Gogebic and Ontonagon counties in Michigan and Iron county, Wis.

With this saw mill convenient to its substantial logging operations, the Marathon company can supply its own outlet for the hardwoods not wanted for the paper mills. It is estimated that the mill can be operated for fifteen years, based on the annual supply of timber available. A crew of 150 men is to be put at work at the saw mill, and others may be added if the company decides to build drying kilns and storage sheds for the hardwood.

Four jobbers are carrying on substantial logging operations in the Marathon holdings. The estimated cut this winter is 8,000,000 of hemlock logs, 4,000 cords of pulpwood, and 4,000,000 to 5,000,000 feet of hardwood.

Conforming to Code Requirements

More settled conditions are expected when the news print and paper and pulp codes are placed in effect November 27 under the National Recovery Act. Most of the mills already have readjusted working schedules and wages to conform to the code requirements, and the number on the pay rolls is by far much larger than it was ninety days ago. A greater stability of prices will be welcomed so future sales and marketing policies will not be fraught with uncertainty as to production costs.

Labor representatives have taken note of the provision stipulated by the president that hearings are to be held on all codes ninety days after their adoption to determine the adequacy of the prescribed minimum wages. Those who appeared in the code hearings at Washington still hope to bring about a six-hour day, 36-hour week, with a minimum wages of 50 cents in the north zone, and no reductions below that figure for women. The code now provides a 40-hour week, with 38 cents an hour as the minimum wage for men, and five cents an hour less for women. It is estimated that the news print code will increase employment 10 per cent and pay rolls between 15 and 20 per cent, and that the paper and pulp code would restore employment to the 1929 figure of 128,000 persons, with some deductions for production and technological changes which might reduce the number of 120,000 persons.

Pulpwood Shipments Continue

Coal and pulpwood shipments from Green Bay to mills of the Fox River Valley will continue at least until December 1 if the cold does not hamper navigation, according to Ben Prugh, manager of the Fox River Navigation Company. Because of the amount of pulp and pulpwood imports now received at the Green Bay docks, the company has experienced a marked increase in the volume of shipping, since a large amount of this raw material is redistributed by the navigation company to mills along the Fox river. Ocean and Great Lakes vessels can operate only as far as Green Bay, and smaller craft must handle the river traffic. The records kept at the government locks indicate that the addition of river shipment of pulp and pulpwood this season has made the tonnage the heaviest ever handled, with October setting the high mark of 48,681 tons of cargo passing up river.

Ports along the Great Lakes likewise have experienced a stimulation of tonnage due to pulp importations. At Marinette, Wis., ten cargoes of woodpulp and sulphur were brought in for mills at that point. Green Bay, Manitowoc and Milwaukee, Wis., also report increases.

News of the Industry

Employees of the Neenah Paper Company, Neenah, Wis., have chosen the mill council plan of representation for labor in matters pertaining to the mill and its working conditions. Each department has elected its representatives to sit with the management representatives on the council. Policies as to wages, hours and production are to be outlined at future sessions.

C. R. Phenicie, vice president of the Wisconsin Public Service Corporation, Green Bay, Wis., was the principal speaker at a safety meeting of employees of the Rhinelander Paper Company and other industries at Rhinelander, Wis., November 22. E. W. Boyce, manager of the utility's office at Rhinelander, was chairman.

Trial of the damage suit brought by the Hoskin-Morainville Paper Company, Menominee, Mich., against the Bates Valve Bag Corporation, Marinette, Wis., is scheduled to begin in the circuit court of Menominee county on December 4. The plaintiff seeks recovery for losses alleged to have been suffered because of the installation of equipment to supply the paper needs of the bag company.

Andrew Zemlock, of Neenah, Wis., was honored last week by the Gilbert Paper Company, Menasha, Wis., for having completed forty years of continuous employment. He was presented with a watch by company officials. Mr. Zemlock is the oldest man on the pay roll in point of service.

Kenneth H. Burke, Chicago manager for the Straubel Paper Company, Green Bay, Wis., and Miss Burnadette LeRoy, of Appleton, Wis., were married Nov. 21 at the home of the bride's parents, Mr. and Mrs. E. D. LeRoy, at Appleton. Mr. Burke formerly was from Gary, Ind. The couple will be at home after December 1 at 4724 Malden Ave., Chicago.

Potdevin Co. Ships Machinery

The Potdevin Machine Company, 1221 38th street, Brooklyn, N. Y., has just shipped to the Strong Bag Company of Richmond, Va., a second flour bag tuber. This is in addition to a bottomer with automatic feed recently delivered to the same customer, supplementing a bottomer with hand feed furnished some time ago. The new Potdevin units will be installed in extensions which the Millhiser Bag Company, Inc., has just completed at Richmond.

Demand for Paper Improves in Philadelphia

Fine Paper Market Becoming More Stable, With Quotations Generally Steady to Firm—Coarse Paper Section Sharing General Betterment—Higher Grades of Paper Stock Stronger Than of Late—Trade Association Institute May be Formed

PHILADELPHIA, Pa., November 27, 1933—Developments in all branches of the trade which first made themselves manifest in the mid-week past, and were continuous as this new week opens, have given the trade a truly genuine foretaste of the spirit of Thanksgiving, now so close at hand. These improvements consisted of a generally stimulated activity on the part of consumers; not one at all approaching a rush but one bearing every semblance of a healthful and continuing character. The results are disclosed not only by the comments of the fine and coarse paper distributors, and the stock dealers, but are made evident to the observer who goes through the centralized paper district in Philadelphia. A week ago the streets were almost barren of trucks with loads of goods. From about Wednesday last, while there has been by no means a congestion, nonetheless evidences of a flowing out of goods from stores and warehouses are quite numerous.

But above all is the exceedingly better conditions under which business is now being done, by the fine paper distributors particularly, and which unquestionably has elements of permanence in it. Early in the present week there will be held a meeting of the credit men of the fine paper houses to review the progress made during the last month since the cash basis list for 90-day delinquents was established. The definite count of removals from the C.O.D. list has not been made but it is known that a very marked reduction from the six or seven hundred who originally were placed on it, has been attained. Beyond all question, according to the statements of representative credit men, the movement culminating in the C.O.D. list has been entirely successful, and, moreover, has been an inspiration to the printing industry, which is moving along similar lines with regard to the final consumer of printing papers—its own customers.

No Notable Changes

During the week there were no notable changes in either quotations on paper stock or in the price lists of the distributors, but there exists a belief on the part of the latter that next month—or at latest the turn of the year—will bring an upward revision. However, it was not found necessary to adjust impending advances in prices in order to stimulate buying. The distributors are not endeavoring to force results by any such means.

Under the terms of the new forms of contract now effective, in the fine paper business, obligations under a change of prices are made mutual. In other words, while under the contract the buyer is protected against any increase in prices; the distributor, on the other hand, is protected against any decline. The large volume of business is being done on the base of price at the time of sale, but where a price at time of delivery is specified, there is, of course, this safeguard which until the present year did not exist. Recently the board mills suffered because of the tremendous cancellation of orders which was made—which had been placed when board prices were advancing, and which were reflected when the expected increases had been checked.

Among the paper stock dealers there is reported a change for the better, not among the poorest packings or mixed and commons, but among select packings of these articles and almost the entire line of the better grades. There has been no increase in mill prices but there has been quite an increase in demand for the better grades and these are moving quite as quickly as they are being packed up. In some instances, however, these still are being stored.

News of the Trade

Officers of the Philadelphia Paper Trade Association have been approached informally on their attitude toward the organization in this city of a Trade Association Institute. Its projectors point out that under N.R.A. codes, trade associations have been given an importance that they never before had; that membership in the trade organization is a virtual necessity on the part of distributors and that through the organization of the proposed Institute it will be possible for the better organized trades—and the paper trade is looked upon as one that is almost one hundred per cent organized now—to give the benefits of experience to weaker organizations for eventual, if not immediately direct betterment. The new movement will formally be discussed at the next meeting of the Paper Trade Association.

Volunteers in the association who enlisted in the Welfare Drive—the purpose of which is to raise six million dollars for a community chest—report that while they have not been as successful as they were a year ago, the percentage of success that has been attained compares quite favorably with the similar one of the Welfare Drive generally.

The Paper and Bag Division of the Paper Trade Association has changed its scheduled meeting night from Tuesdays to Mondays—the first of these sessions to be held in December. Meanwhile there has been appointed the following committee to engage in a membership drive, to be reported on at the December meeting: Nathan Isen, chairman; Frank Dubin, James Gallen, Harry Kornberg, B. Schwartz, Louis Kernis, Ben Tubis and S. Riskoff.

Responses of the paper trade and the efforts in which the leading part was taken by Norbert A. Considine, were highly satisfactory. Virtually every fine paper house was represented at the Direct Mail Advertising program conducted in the rooms of the Poor Richard Club; one of those attending, however, was unfortunate upon his return from it. Fred. Balch, of the Schuylkill Paper Company, homeward bound was crashed into by a truck which caused him painful though fortunately not severe personal injury, necessitating his treatment at a hospital but not preventing his return to business activities later on. His auto was very much damaged.

Leslie C. Bartlett, of the Eastern Paper Company, chairman of the nominating committee of The Paper and Cordage Association, will meet at noon tomorrow in Kugler's Restaurant with the following who are his associates on the committee: Harry Platt, of Denney Tag Company, secretary of the association; E. L. Richards, of Buffalo Envelope Company, Amos Coath, of Frank W. Winne & Son, Inc., and Fred Brower, of the Atlantic Gummed Paper Company, for the purpose of nominating officers for the ensuing year.

Delaware Valley TAPPI Discusses Beating

The Delaware Valley Section of the Technical Association of the Pulp and Paper Industry met at the Engineers Club, Spruce Street, Philadelphia, Friday evening, November 24, with Dr. G. E. Landt of the Continental Diamond Fibre Company, presiding as chairman. About one hundred attended.

Two papers on the subject of beating and hydration were to be presented but one of the speakers, James Coghill of the Noble and Wood Machine Company, was unable to be present because of illness.

Effect of Beating of Cellulose Fibers

The speaker of the evening was James d'A. Clark, technical director of the Scott Paper Company, Chester, Pennsylvania, who discussed the work of W. Boyd Campbell of Canada, James Strachan of England, and others, and attempted to rationalize the various theories.

Mr. Clark stated that the following conclusions have been reached. We may consider that the structure of cellulose fibers has been fairly well established. Each fiber is made up of annular layers of crystallites, and each crystallite is composed of a large number of rod-like molecules of cellulose bound together. In turn the cellulose molecule itself is built up of a chain of dextrose molecules, polymerized together in groups of four. The structure is porous, hygroscopic and elastic. The lateral bonds, probably formed by the hydroxyl groups between the rod-like elements, are not very strong, and have a chemical affinity for water. When immersed in water, the fibers swell and the component parts are loosened, certain of the hydroxyl groups combining with water, thus weakening the bonds. Beating cuts, bruises and flexes the fiber, opens it up further, and softens and fibrillates it. When the sheet is formed, depending on the fineness and flexibility of the cellulosic material present, the fibrillages of all dimensions intertwine and the whole is compacted to a greater or lesser degree as water is removed by pressure due to surface tension effects, and magniture depending on the fineness of the particles involved.

As the paper dries, the combined water is driven off and mutual hydroxyl bonds are formed to hold the structure together, aided perhaps by the adhering qualities of any other effective non-cellulosic materials present. The strength of the sheet primarily depends on the effectiveness with which the fibers and fibrillae are prevented from slipping along and apart from between each other and not by direct tensile effects, which also explains the important function of length of fiber on the strength of the sheet, which is shown to be marked.

Lively Discussion

Because of the great interest in the subject of the paper, it was perhaps fortunate that there were no others on the program since it was very late when the meeting finally adjourned.

In answer to a question the speaker indicated how it is possible to free stock by diluting it and passing it through a jordan.

One member inquired why the tear of a stock increased rapidly at the start of a beater action but gradually reached a minimum less than initial tear on continued beating. It was pointed out that the initial action of the beater is to fibrillate the fibers thereby contributing tear strength producing properties but later this advantage is lost when the fibers are shortened by cutting action.

The question was asked "Why do different types of hydrating engines produce different types of paper." In response the speaker showed that an engine having a pounding action smashes the pulp eventually to a greaseproof producing stock. One having a rubbing action produces flexible fibers and another having a cutting action produces a bulky sheet.

Someone asked why better formation was generally obtainable in winter. There were several responses that indicated that the viscosity of the water was largely responsible, cold water being more viscous than warm water (the flow rate is 25 per cent greater at 60 deg. C. than at 30 deg. C.) and stays in the fiber mass on the machine wire longer, thereby assisting formation.

Paper Drying to be Discussed Next

The next meeting of the Section will be held at the Engineers Club, Philadelphia, on December 15, at which time a discussion on paper drying will be led by S. W. Fletcher of the J. O. Ross Engineering Corporation, New York.

Those Who Atttended

F. E. Winslow, General Electric Company, Philadelphia, Pa.; A. J. Luettgen, P. H. Glatfelter Company, Spring Grove, Pa.; D. Manson Sutherland, Jr., Trenton, N. J.; G. E. Landt, Continental Diamond Fibre Company, Bridgeport, Pa.; J. d'A. Clark, Scott Paper Company, Chester, Pa.; Sidney Hausman, Congoleum-Nairn, Inc., Asbestos, Md.; E. L. Knoedler, same company; G. S. Brickett, same company; J. C. Harper Jr., West Jersey Paper Manufacturing Company, Camden, N. J.; H. E. Whitaker, Mead Corporation, Chillicothe, Ohio; C. A. Shubert, Dill & Collins Inc., Philadelphia; S. W. Macbeth, same company; H. T. Lundquist, National Vulcanized Fibre Company, Wilmington, Del.; E. J. Albert, Thwing Instrument Company, Philadelphia; John Roslund, Moore & White Inc., Philadelphia; J. E. Plumstead, Jessup & Moore Paper Company, Wilmington, Del.; R. E. Bare, Elk Paper Manufacturing Company, Childs, Md.; G. H. Detwiler, Heller & Merz Corporation, Philadelphia; E. Keys Haas, Elk Paper Manufacturing Company, Childs, Md.; W. Page Selby, same company; M. Craig Maxwell, McDowell Paper Mills, Manayunk, Pa.; F. W. Brainerd, Scott Paper Company, Chester, Pa.; W. C. Robinson, Dill & Collins Inc., Philadelphia; G. W. Roberts, General Electric Company, Philadelphia; C. E. Peterson, Riegel Paper Corporation, Riegelsville, N. J.; C. M. Connor, Valley Forge Laboratories, Conshohocken, Pa.; F. J. McAndrews, McDowell Paper Mills, Manayunk; Charles McDowell, McDowell Paper Mills, Manayunk; L. F. Derr, Philadelphia; C. J. Kern, Moore & White Inc., Philadelphia; C. W. Rivise, Philadelphia; L. Justice, Container Corporation of America, Manayunk; W. T. Marble, same company; R. G. Macdonald, secretary of TAPPI, New York; W. R. Maull, Dill & Collins Inc., Philadelphia; W. D. MacGeore, Container Corporation of America, Manayunk; E. T. Street, Downingtown Manufacturing Company, Downingtown, Pa.; Jacob Edge, same company; B. M. Thomas, Container Corporation of America, Manayunk; H. C. Schwalbe, Dill & Collins Inc., Philadelphia; A. M. Cooper, Westinghouse Electric and Manufacturing Company, Philadelphia; S. M. Hesser, Hinde & Dauch Paper Company, Gloucester, N. J.; Valdemar Jacobsen, National Aniline and Chemical Company, Philadelphia; A. W. Wickham, MacAndrews & Forbes Inc., Camden, N. J.;

Fred Streicher, Dill & Collins, Inc., Philadelphia; William Stericker, Philadelphia Quartz Company, Philadelphia; T. K. Cleveland, same company; Russell Morehouse, same company; C. M. Baker, engineer, American Paper and Pulp Association, New York; W. H. Buxton, Philadelphia Quartz Company, Philadelphia; R. S. von Hazmburg, Scott Paper Company, Chester, Pa.; J. Carl Schmidt, E. I. du-Pont de Nemours & Company, Philadelphia; E. S. Hinman, Penn Fiberboard Corporation, York, Pa.; S. H. Mikell, P. H. Glatfelter Company, Spring Grove, Pa.; R. L. Drew, J. C. Dieffenderfer, Paper Makers Chemical Corporation, Easton, Pa.; L. D. Reuben, Continental Paper and Bag Corporation, York Haven, Pa.; W. O. Hisey, P. H. Glatfelter Company, Spring Grove, Pa.; H. P. Cannon, Container Corporation of America, Manayunk; W. M. Shoemaker, National Vulcanized Fibre Company, Yorklyn, Del.; Jack Gregor, Jessup & Moore Paper Company, Wilmington, Del.; J. M. Osborn, Dilts Machine Works, Fulton, N. Y.; W. L. Fitzgerald, Thwing Instrument Company, Philadelphia, Pa.

Indianapolis Demand Holds Up Well

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, IND., November 27—Demand for paper in this territory seems to be holding up well in most lines. In some instances there is a widening demand, particularly noticeable lately in the fine paper lines with covers and book paper also having a slight increase. Prices are well established. Both manufacturers and jobbers now are beginning to think a little of inventory. It is certain inventories will be small at the year end. Stocks have been held at a low point by all concerned. The manufacturers particularly are keeping their production within bounds and their finished products are at a low ebb.

Whether this will influence the buying policy of consumers is somewhat uncertain. There are some who argue that contract buying will broaden materially after the first of the year because of the hesitancy of manufacturers to keep large finished stocks, which have permitted a hand to mouth buying policy to flourish. It is certain the consumers are going to buy for only immediate needs as long as they are assured their demands can be met promptly. Many believe it will take considerable time to change this buying policy which has been the rule for some years now.

The approaching holidays have caused a firm stability in kraft lines. Prices are well established and demand has broadened somewhat. The demand for wrapping paper and bags also has increased slightly due to similar causes. The container men seem to be fairly well satisfied with present business. Reports received here indicate that most of the factories will continue necessary production over the year end, though some of them may stop during actual inventory.

The paper stock market continues dull. Mill demand is light and paying prices are very low. Local stock men say there is some indication of a trifle more activity at the mills, but thus far prices have not been affected.

Paper Exports From Japan Double

WASHINGTON, D. C., November 24, 1933—Exports of paper from Japan during the first six months of this year as shown in the published trade returns, are nearly double those of the corresponding period of last year. The heaviest increase occurred in shipments of printing papers, which rose from 14,366 short tons to 33,769 tons. Proportionately the same increase also took place in board shipments, which increased from 7,981 tons to 11,250 tons. These two items constitute the bulk of the shipments.

Rockwood Ceiling Drive Base

The new Rockwood Ceiling Drive Base gives to ceiling drives the same full range of tension adjustment as in the floor mounting bases. But the belt tension adjustment can be made more conveniently than in the case of the ordinary horizontal drive.

The ceiling drive base is quite similar to the standard base excepting that it has special hanger arms which suspend the motor *horizontally*, and give greater clearance from the ceiling. The adjustable steel angles which move horizontally on the hanger arms are supported by a *ledge* cast on the bottom of the hanger arms. This ledge carries the weight of the motor and takes the weight from the slotted-head screws in the arm slot.

This ledge is important as not only does it give added strength and safety to the motor support, but also it permits the screws to be loosened and the adjustable angles to be moved along the ledge simply by turning the secondary arm-screws while the drive is running, so that one man can quickly make any change in belt tension desired without assistance and without difficulty.

The new hanger arms have extra strength and rigidity for unquestioned safety. There is no danger that the motor will fall, either in operation or while being adjusted. Too often ceiling drives constitute a trouble zone for plant maintenance men. The belts stretch and lose their tension. Because the drives are inaccessible, it is difficult to give them the attention they require.

With the Rockwood Ceiling Drive Base the auxiliary pair of screws on the hanger castings serve to move the motor relative to the pivot shaft without having to support the motor weight independently while the change is being made. Thus one man, working overhead from a ladder, can make the change. All he does is to first loosen the screws in the arm slots, then move the motor—forward (towards the driven pulley) if more tension is desired—backward (away from the driven pulley) if less tension is desired—by means of the adjusting screws on the arms. When this is done be retightens the screws in the arm slots and turns the nuts on the pivot shaft screws until the arms are brought back to horizontal.

Engineers and maintenance men are especially appreciative of the ease with which one workman can make the overhead adjustment and the quickness with which it can be done. With the new ceiling base, the safety chain supplied without extra charge always insures that the motor will not fall below its horizontal position even if the belt or fastener should fail.

The important advantages claimed for the Rockwood Ceiling Drive include the following: Inexpensiveness, ease of installation, automatic maintenance of belt tension, cleanliness and quiet running and long life for belt and bearings. It is manufactured by the Rockwood Manufacturing Company, Rockwood, Ind.

Paper Stock Used by Japanese Mills

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., November 29, 1933.—Consumption of paper base stocks by member mills of the Japanese Paper Manufacturers' Association during the month of July comprised the following; pulpwood 5,924,640 cubic feet, rags 865 short tons, straw 939 short tons, waste paper 1,503 short tons, according to Assistant Trade Commissioner Donald W. Smith, Tokyo. Thirty-one thousand and four tons of chemical pulp and 24,507 tons of mechanical pulp were produced in the association mills, while it was necessary to purchase 8,580 tons of the former and 318 tons of the latter from other sources.

Code of Fair Competition for the Newsprint Industry of the United States

The following is the text of the Code of Fair Competition for the Newsprint Industry as signed by President Roosevelt Friday, November 17.

To effectuate the policies of Title I of the National Industrial Recovery Act the following is hereby established as the Code of Fair Competition for the above industry, and shall be binding on every member thereof.

Article I—Definitions

1. The following words are used in this Code with the meanings herein set forth:

"Newsprint"—The word "newsprint" is used in this Code with the same meaning with which the words "standard newsprint paper" are used in paragraph 1672 of the Tariff Act of 1922, and in paragraph 1772 of the Tariff Act of 1930.

"Industry"—The manufacture in the United States from wood pulp and/or other stock of newsprint and all other papers, except rotogravure paper, when such other papers are manufactured and sold for regular use in the making of daily newspapers.

"Member"—A natural person, partnership, association, corporation, trust, trustee, trustee in bankruptcy, or receiver engaged in such industry.

"Act"—Title I of the National Industrial Recovery Act.

"Administrator"—The National Recovery Administrator.

"The Association"—The Association of Newsprint Manufacturers of the United States.

Article II—Organization

1. The Advisory Committee of the Association is hereby designated as the agency for administering this Code, and is hereby constituted and hereinafter referred to as the "Code Authority." The Administrator may designate three (3) persons as additional members of such Code Authority who shall have no vote, but in all other respects shall be members thereof.

2. The expenses of administering this Code shall be borne pro rata by all members of the Industry who accept the benefits of the Code Authority or otherwise assent to this Code, in accordance with a formula to be adopted by the Code Authority. The Association shall be responsible for the payment of such expenses.

Article III—Hours of Labor

1. No paper machine shall be operated in excess of 144 hours in any week.

2. Employees in the industry shall not be required or permitted to work hours in excess of the limits prescribed in the following schedule:

SCHEDULE OF WORKING HOURS

(*a*) Watchmen: 8 hours in any one day and 56 hours in any one week.

(*b*) Chauffeurs, truckmen, switching crews, engineers, firemen and electric and hydroelectric operators and filter-plant employees: 168 hours in any period of four consecutive weeks, but no more than 10 hours in any one day and 48 hours in any one week.

(*c*) Tour-workers in continuous process operations: 8 hours in any one day and an average of 40 hours per week in any period of 13 consecutive weeks; provided, however, that additional hours may be worked—

(1) To avoid a shut-down due to the temporary absence of a relief worker; (2) In changing wires and machine clothing; and (3) In clean-ups, wash-ups, and ordinary repairs and adjustments in cases where a machine is shut down for a period of not less than eight consecutive hours.

(*d*) All other laborers, mechanical workers, or artisans employed in any plant, mill, or factory or on work connected with the operation of any plant, mill, or factory: An average of not more than 40 hours per week in any period of 13 consecutive weeks, but not more than 48 hours in any one week, provided, however, that time worked in excess of eight hours in any one day shall be paid for at not less than time and one third.

(*e*) Executives and their personal secretaries and other employees regularly engaged in a supervisory capacity receiving $35.00 or more per week and outside salesmen: No limitation.

(*f*) All other employees: An average of 40 hours per week in any calendar year and an average of not to exceed 48 hours per week in any period of 13 consecutive weeks. Provided, however, that no limitation of hours of work contained in said schedule shall apply to employees of any class when engaged in emergency repair or emergency maintenance work involving break-downs or protection of life or property.

3. At such intervals as the Code Authority shall prescribe, every member shall report to the Code Authority (a) the number of man-hours worked under subdivisions c (1) and c (2) of said schedule and the ratio which said man-hours bear to the total number of man-hours of labor under subdivision c: and (b) shall furnish the Code Authority such information as it may require in order to enable it to determine whether the limitations contained in said schedule have been exceeded.

4. No employee shall be permitted to work for more than one member of the Industry an aggregate number of hours in excess of the number prescribed in said schedule.

Article IV—Wages

1. The minimum rate of wage of any laborer, mechanical worker, or artisan employed in any plant, mill, or factory or on work connected with the operation of any such plant, mill, or factory shall be as follows:

Male labor, 38 cents per hour.
Female labor, 33 cents per hour.

Provided, however, that where a state law provides a higher minimum wage than is provided in this Code, no person employed within such state shall be paid a wage below that required by such state law.

2. Piece workers shall be paid at rates which will yield a worker for an hour's work not less than the minimum rates prescribed.

3. The minimum rates of wages for all other employees except commission salesmen shall be as follows: Not less than $15 per week in any city of over 500,000 population, nor less than $14.50 per week in any city between 250,000 and 500,000 population, nor less than $14 per week in any city between 2,500 and 250,000 population, nor less than $12 per week in towns of less than 2,500 population.

4. The minimum wages hereby prescribed shall not in any way be considered as a discrimination by reason of

sex and where, in any case, women do substantially the same work or perform substantially the same duties under the same conditions as men, they shall receive the same rate of wages as men receive for doing such work or performing such duties. The Code Authority shall prepare and file with the Administrator within ninety days after the effective date of this Code, a description of all occupations in the industry in which women are employed.

5. The wage rates of all employees receiving more than the minimum rates herein prescribed shall be reviewed and such adjustments, if any, made therein as are equitable in the light of all the circumstances. Within ninety (90) days after the effective date hereof, the Code Authority shall report to the Administrator the action taken by all members of the industry under this section.

6. A person whose earning capacity is limited because of physical or mental deficiency, age, or other infirmity, may be employed on light work at not less than eighty (80) per cent of the minimum wage prescribed in Section 1 hereof, if the State Authority designated by the United States Department of Labor shall have issued a certificate authorizing the employment of such person on such basis. provided, however, that the total number of such employees in any one plant shall not exceed three (3) percent of the total employees in such plant. So much of this Section as requires the issuance of such a certificate shall not take effect until sixty (60) days after the effective date of this Code.

Article V—General Labor Provisions

1. No person under sixteen (16) years of age shall be employed in the industry nor anyone under eighteen (18) years of age at operations or occupations hazardous in nature or detrimental to health. The Code Authority shall submit to the Administrator within sixty (60) days after the effective date of this Code a list of such occupations. In any State an employer shall be deemed to have complied with this provision if he shall have on file a certificate or permit duly issued by the authority in such State empowered to issue employment or age certificates or permits showing that employee is of the required age.

2. Employees shall have the right to organize and bargain collectively through representatives of their own choosing, and shall be free from the interference, restraint, or coercion of employers of labor, or their agents in the designation of such representatives or in self-organization or in other concerted activities for the purpose of collective bargaining or other mutual aid or protection. No employee and no one seeking employment shall be required as a condition of employment to join any company union or to refrain from joining, organizing, or assisting a labor organization of his own choosing. Employers shall comply with the maximum hours of labor, minimum rates of pay, and other conditions of employment approved or prescribed by the President.

3. Labor agreements now in force between members and their employees shall be affected only by such provisions of this Code as may prescribe higher wages and shorter hours than are provided for in such agreements.

4. Employers shall not reclassify employees or duties of occupations performed by employees so as to defeat the purposes of the Act.

5. All employers shall post full copies of this Code in conspicuous places accessible to employees.

6. Standards for safety and health shall be submitted by the Code Authority to the Administrator within six (6) months after the effective date of this Code.

7. The Code Authority shall make a study of conditions in the Industry to determine the feasibility of the adoption of a shorter working day and shall, within three (3) months after the effective date of this Code, make a report of its findings to the Administrator. The Code Authority shall also submit to the Administrator within six months after the effective date of this Code a plan for the stabilization and regularization of employment. The Code Authority may also submit recommendations to the Administrator for the establishment of rules relative to work on Sundays and holidays, to a weekly day of rest, and to overtime work generally and rates of wages therefor. Such recommendations, when approved by the Administrator, shall have the same force and effect as other provisions of this Code.

Article VI—Accounting

1. The Code Authority shall, as soon as practicable, propose a standard method of accounting and costing for the industry and submit the same to the Administrator. When it shall have been approved by the Administrator, every member shall use an accounting and costing system which conforms to the principles of, and is at least as detailed and complete as, such standard method.

Article VII—Reports; Statistics

1. Each member shall prepare and file with the Code Authority, at such time and in such manner as it may prescribe, statistics of plant capacity, production, sales in units and dollars, stocks on hand, number of employees, wage rates, employee earnings, hours of work, and such other data or information as the Code Authority or the Administrator may from time to time require, and in addition, shall furnish government agencies such statistical information as the Administrator may deem necessary for the purposes recited in Section 3 (a) of the Act.

2. Except as otherwise provided in the Act, all statistics, data, and information filed with or required by the Code Authority in accordance with the provisions of Section 1 hereof shall be confidential and the statistics, data, and information of one member shall not be revealed to another member. No such data or information shall be published except in combination with other similar data in such a manner as to avoid the disclosure of confidential information.

3. The Code Authority shall make and file with the Administrator such reports as the Administrator may from time to time require.

Article VIII—Violations

1. The failure on the part of any member of this industry to comply with the provisions of this Code or to perform any obligation imposed on him thereby shall constitute a violation of the Code.

2. The Code Authority shall investigate alleged violations of this Code and make reports thereon to the Administrator.

Article IX—General Provisions

1. This Code may, with the approval of the President, be amended except as to provisions required to be included therein by the Act.

2. If any member of the industry is engaged in any other industry, the provisions of this Code shall apply to and affect only that part of his business which is included in the industry.

3. The Code Authority may confer with the members of the industry and the consumers of its product in respect of the stabilization of the industry and the elimination of unfair practices and destructive competitive prices, and may formulate and submit to the Administrator its recommendations to that end. Such recommendations when approved by the Administrator shall have the same force and effect as any other provisions of this Code.

4. The Code Authority may secure current information concerning the competition in domestic markets of imported newsprint, and if it shall find that such newsprint is being imported into the United States in substantial quantities or increasing ratio to domestic production and on such terms or under such conditions as to render ineffective or seriously endanger the maintenance of this Code, it may complain to the President pursuant to the provisions of Section 3 (e) of the National Industrial Recovery Act and petition for suitable restrictions on the importation of such newsprint.

5. In order to maintain at all times an adequate domestic supply of raw material for the Industry, it is the declared purpose of the Industry to conserve forest resources and bring about the sustained production thereof. The Code Authority shall cooperate with the Secretary of Agriculture and other National and State Officials and Agencies and with the Code Authorities of other Industries in planning such practical measures as may be necessary to accomplish such declared purpose, and shall, upon the request of the Secretary of Agriculture, join with the Lumber and Timber Products Industries in any conference which may be held pursuant to the provisions of Article X of the Code of Fair Competition of the Lumber and Timber Products Industries, approved by the President on August 19, 1933.

6. The trade standards and customs covered by the appendix hereto attached are made a part hereof, and any deviation from them is a violation of the Code.

7. This Code and all the provisions thereof are expressly made subject to the right of the President, in accordance with the provisions of Section 10(b) of the National Industrial Recovery Act, from time to time to cancel or modify any order, approval, license, rule, or regulation, issued under said Act, and specifically to the right of the President to cancel or modify his approval of this Code or any conditions imposed by him upon his approval thereof.

8. This Code shall become effective on the second Monday after its approval by the President.

APPENDIX

Trade Customs and Trade Practices

1. Newsprint, other than tinted news, is white, cream white or blue white, and mild variations thereof.

2. Every manufacturer shall deliver as newsprint paper, as nearly as practicable, paper of an average basis weight of 32 lbs. Five (5) percent over or under specified base of weight shall be considered good delivery for individual rolls. Orders for heavier weight bases (over 24 x 36—32 lbs. to 500 sheets) shall be furnished at no price concession. Newsprint shall not be sold on a production basis.

3. No newsprint shall be designated as "Culled" and sold at a reduced price.

4. The billing weight of roll newsprint shall be the gross weight including paper and wrappers, less only the weight of cores if returnable cores are used. Sheet newsprint shall be billed at the ordered weight unless there is a shortage in excess of 2½ percent, in which event paper shall be billed at the actual scale weight.

5. Terms—net cash United States Funds, 30 days from date of shipment; or from date of withdrawal from warehouse in the case of water shipments; or 15th of month for shipments made during preceeding month or any other mutually agreeable arrangement which contemplates an approximate thirty day cash settlement. 6% interest shall be paid on all amounts remaining unpaid on due dates. Time of payment may be extended beyond thirty days, provided interest at the rate of 6% per annum is charged after thirty days from date of shipment, or from date of withdrawal from warehouse in the case of water shipments.

6. Returnable cores, either paper or iron, shall be charged to the purchaser at 2 cents per running inch and shall be returned promptly, freight prepaid, to the manufacturer. Cores shall be credited to the purchaser at the invoiced price when a prepaid bill of lading showing the number and sizes of cores returned to mill of manufacturer is received by the manufacturer. Nonreturnable cores shall be included in invoice price of paper and shall not be returnable.

7. No allowance shall be made for waste, damage, or paper left on cores. In case of claim of any nature applying on any shipment, the manufacturer shall be notified immediately, but no claim shall be allowed for consequential damage.

8. Miscellaneous Differentials: For newsprint in sheets, the differentials shall not be less than those stated in the following schedule:

		White	Colored
For sheets 150 sq. in., and larger	per ton	5.00	10.00
For sheets 72 sq. in. to 149 sq. in.	do	10.00	15.00
For sheets 36 sq. in. to 71 sq. in.	do	15.00	20.00

These differentials shall be with relation to the price of white newsprint in rolls.

Two dollars per ton shall be charged for skid loads if more than 3,000 lbs.; $3.00 per ton on quantities from 3,000 lbs. to 2,000 lbs.; and $5.00 per ton for quantities of 2,000 lbs. and under.

Press trimming shall be charged for, over the sheet price, as follows:

$1.00 per ton for one side.

$2.00 per ton for two sides.

$3.00 per ton for either three or four sides.

If sheet news is packed in skeleton frames, this charge shall be $5.00 per ton over the sheet price.

9. The foregoing trade customs and practices with respect to newsprint shall also apply to all other products of the industry.

St. Regis To Increase Wages

[FROM OUR REGULAR CORRESPONDENT]

DEFERIET, N. Y., November 27, 1933.—Announcement was made here under which the wage scale of employees in the mills of the St. Regis Paper Company, and Taggart Brothers will be increased from five to six per cent. During the past week officials of the various mills in this section conferred with representatives from New York city at a meeting here at which the action relative to the new wage scale was announced. About 50 representatives were in attendance at the meeting here. Following the meeting the head officials stated that the wage scale would be returned to the same basis prior to last spring when reductions were made. Officials of the paper mills claim that business is showing improvement and that many of the branches of the company are now running night and day. Several hundred persons are employed by the St. Regis mills in this section and as a result of this new action business in other lines is also expected to show a material benefit.

Ask Duty Increase on Straw Board

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., November 29, 1933.—Application has been filed with the United States Tariff Commission by the Central Fibre Products Company, Tama, Iowa, asking for an increased duty on straw board.

A Review of the Literature of Sizing

By E. Sutermeister[1]

(Continued from the issue of the PAPER TRADE JOURNAL *of November 23, 1933)*

Size Analysis and Testing

References are given to a series of size analyses and a number of methods for the analysis of sizes and the control of emulsions. In regard to the methods of analysis the tendency seems to be away from the time-honored ether extraction method for free rosin and toward titration methods, but the latter procedure has been criticized as inaccurate where oxidized rosin is present.

A start has been made in the development of a standard method for evaluating sizing materials in the laboratory.

In view of the fact that many of the conclusions regarding sizing tests are based on the analysis of sizes and emulsions it would seem that our knowledge of such methods is not entirely adequate.

von Possanner (Chem. Ztg. *38* 100 (1914)) reports on the analysis of 29 samples of size of three classes, including rosin sizes, colloid sizes and sizes with loading. Marcusson (Chem. Rev. Fett. Ind. *21* 1 (1914)) outlines the methods for the examination of commercial sizes for additional substances which may be present, such as glue, casein, starch, dextrins, gums, viscose, etc.

Whittington (Paper Trade J. *88* No. 8, 231 (1929)) determines the moisture in size by drying at 110 degrees. Total rosin is obtained by extracting with ether, after acidifying with a measured volume of standard acid, and total alkali is calculated from the titration of the excess of acid in the aqueous layer from which the rosin has been extracted. Free rosin is found by titration with alcoholic KOH. Dreshfield (Paper Trade J. *86* No. 21, 59 (1928)) also discusses the analysis of size for water, total ash, free Na_2CO_3 and total, free and combined rosin. He shows that the ether extraction method for free rosin gives too high results because of hydrolysis in aqueous solution. The error is a variable, depending on dilution, and is greater with neutral than with high free rosin sizes. He recommends determining free rosin by titration with alcoholic KOH, using phenolphthalein as indicator and dissolving the sample of size in absolute alcohol. He points out that the analysis of the size is no indication of its condition as it enters into reaction in the beater. Kennedy (Tech. Assoc. Papers *12* 254 (1929)) is opposed to the analysis of size by titration, claiming that it does not give correct results when oxidized rosin is present.

As control tests for size emulsions Kiely (Tech. Assoc. Papers *8* 106 (1925)) discusses three colorimetric methods proposed by Tendick. These consist (1) in diluting the size in a definite way and noting the color of the emulsion; (2) precipitating the size with acetic acid, filtering, air drying and then comparing the color of the precipitates, and (3) noting the color of a toluene extract of the acidified size. In each case a light color indicates a good size. Codwise (Paper *30* No. 23, 7 (1922)) recommends a titration method using thymolphthalein as an outside indicator; a blank test must be made with water under the same conditions as when testing the size. Lorenz (Tech. Assoc. Papers *7* 140 (1924)) from Papier-Fabr. *21* 221 et seq. (1923) finds the drop count method reliable for the control of emulsions. In this method the number of drops is counted when a definite volume is allowed to flow from a capillary tube. The same apparatus must always be used in order to obtain comparable results.

Dreshfield, Haggerson and Heller (Paper Trade J. *93* No. 14, 36 (1931)) have made a study of a number of the variable factors which affect laboratory tests of sizing materials and have made a good start toward a standard method for conducting such tests.

Alum

Where "alum" is mentioned in connection with the sizing of paper aluminum sulphate is now universally understood.

Grades of alum considered as standard in 1914 are mentioned; these are based on the content of Al_2O_3 and Fe_2O_3. Later information strengthens the belief that the value of an alum is proportional to its Al_2O_3 content, but points out that ferrous iron is much less harmful than ferric. From this it might be inferred that grading an alum according to its total Fe_2O_3 content was not entirely logical. The belief is expressed that alum containing 0.4 to 0.5 per cent of iron in the ferric state is not harmful to white papers.

The reaction of alum on size brings forth varying opinions regarding the actual sizing agent; these range from free rosin to an acid resinate of aluminum. (For additional details along this line see "Theories and Experimental Facts"). The reaction of alum on magnesium resinate is also discussed and it is concluded that it is merely an intermediate product which does not involve the use of more alum than would normally be used to obtain hard sizing with sodium resinate.

The alum necessary for precipitation of the size and for producing sized paper are distinctly different quantities. It is pointed out that the alum required in the beater can be little affected by variations in the soda used in size making while, from practical experience, another author claims variations of as much as 100 per cent between that necessary for a 45 per cent free rosin size and a completely saponified one.

Since the water and stock often contain enough calcium and magnesium salts to precipitate all the size used, and since the alum employed is often ten times that necessary for precipitation it would seem as though these points would bear further study.

According to a preliminary report of the American Chemical Society (J. Ind. Eng. Chem. *6* 435 (1914)) the grades of alum are as follows:

Commercial alum	—Not less than 16 per cent Al_2O_3 nor over 1.25 per cent Fe_2O_3
Standard Grade	—Not less than 17 per cent Al_2O_3 nor over 0.50 per cent Fe_2O_3
News Grade	—Not less than 17 per cent Al_2O_3 nor over 1.00 per cent Fe_2O_3
Filter alum	—Not less than 17 per cent Al_2O_3 nor over 0.65 per cent Fe_2O_3 and at least 3 per cent basic.

In connection with the amount of iron in alum Schoeller (Wochbl. Papierfabr. *43* 3222 et seq. (1912)) states that noticeable discoloration of the paper does not take place until the proportion of iron in the form of resinate amounts to 0.04 per cent of the total rosin present. Oeman (Svensk. Pappers Tidn. *28* 483, 508 (1925)) points out that fibers take up iron from ferric compounds, but only slightly from ferrous. Hence ferric iron in alum is more harmful to the color of the paper. Ferric compounds act like those of aluminum in fixing rosin on the fibers. He

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believes that alum containing 0.4 to 0.5 per cent of Fe in the ferric state is not harmful to white paper. Healy (Paper Trade J. *93* No. 14, 40 (1931)) confirms the statement that ferric iron is taken up by fibers to a much greater extent than ferrous, hence the reduced iron in the alum must be considered distinctly less harmful than the oxidized portion.

Lorenz (Ver. Zellstoff Papier Chem. Hauptversamml. 1924, 78) believes the flocculating action of alum to be due chiefly to its very powerful tervalent Al ion and considers (Wochbl. Papierfabr. *60* Sondernummer 23A, 81 (1929)) the value of an alum for sizing to be proportional to its content of $Al_2(SO_4)_3$. Tests of alums with 18 and 14 per cent of Al_2O_3 showed their flocculating powers to be in the ratio of 121 to 95. If acid is needed it is better to use H_2SO_4 than an acid alum.

Kullerud (Papir J. *18* 252 (1930)) supplies tables of specific gravity, pH, Al_2O_3 and SO_3, from which the analysis can be calculated from a determination of the pH value of the sample.

Remarks on the effect of fibers on alum will be found under the heading "Theories and Experimental Facts."

Considering the reactions of size and alum Friedlaender and Seidel (Mitt. tech. Gewerbe-Museums in Wien *11* 65 (1901)) consider the precipitate produced by alum and rosin size a resinate of aluminum because it is almost completely soluble in ether-alcohol and leaves an ash consisting of alumina. De Cew (Paper Makers' Monthly J. *54* 334 (1916)) is of the opinion that a free rosin size is an acid resinate of an alkali metal and that an acid resinate of aluminum is the important sizing agent. This is formed from a neutral resinate only when a large excess of alum is used. Arnould (Papier *23* 35 (1920)) believes that when neutral size is used the alum first reacts to form aluminum resinate which is then partly or wholly transformed to free rosin by the excess alum.

In discussing the action of alum on magnesium resinate Klemm (Wochbl. Papierfabr. *42* 4954 (1911)) finds $MgSO_4$ and free rosin acids to be formed. With a restricted amount of alum a basic sulphate, $Al_2O_3 \cdot SO_4$, is formed, which is insoluble and remains in the precipitate. If alum is added to acid reaction when the decomposition of the magnesium resinate is completed a basic sulphate, $Al_2O \cdot 2SO_4$, is produced. In order to obtain hard sizing it is necessary to use alum to the extent of three times the equivalent of the MgO in the resinate, which is exactly what is necessary in the direct precipitation of sodium resinate. Magnesium resinate is merely an intermediate product which may be harmful by causing coarse flocculation instead of fine. von Possanner (Wochbl. Papierfabr. *42* 2119 (1911)) claims that magnesium resinate suspended in water and treated with alum is partly changed to aluminum resinate and $MgSO_4$.

Alum Necessary.

Neugebauer (Z. angew. Chem. *25* 2155 (1912)) finds that 33 parts of hydrated aluminum sulphate are needed for the precipitation of 100 parts of rosin in neutral size, while Cross and Bevan (Text Book of Paper Making 3rd Ed. 210 (1907)) state that for a size made with 15 per cent Na_2CO_3 the theoretical alum is 0.23 pound of $Al_2(SO_4)_3$ per pound of rosin.

Mueller (Paper Trade J. June 13, 1929) points out that the best pH for precipitating size is 5.5 and that at this point the alum necessary is one third of the weight of the dry size. These conditions do not necessarily give the best sizing results. Dreshfield (Paper Trade J. *86* No. 21, 59 (1928)) shows that the amount of alum required in the beater can be affected but little by the variation in soda content between a neutral and a free rosin size. From experience, and not from theory, De Cew (Manufacture of Paper Vol. IV 1st Ed.) states that with soft water, stock free from impurities and good working conditions 10 pounds of rosin in a size containing 35 to 45 per cent of free rosin will require 15 pounds of alum. If it is in a size with 20 to 25 per cent of free rosin 20 pounds of alum would be required, while if it were fully saponified 30 pounds of alum would be necessary. Concerning practical operations Aschan (Chem. Zentr. *90* 190 (1919)) points out that as much as two thirds of the alum may be lost in the back water.

In considering the length of time the alum acts Turner (Paper June 5, 1922) believes that long contact diminishes the sizing effect and that free acid has the same effect as long time. White water, in which the alum accumulates, may cause trouble because of acid formed by hydrolysis. Minor (Tech. Assoc. Papers *6* 93 (1923)) from theoretical considerations, concludes that it is essential to mix the alum and size with the stock at high concentration and run the stock as soon as possible after dilution. Alum added after the stock is diluted is almost worthless in increasing sizing.

Alum Substitutes

A substitute for alum has been sought in the past, first for reasons of economy and more lately with the idea of reducing the acidity of the paper and hence making it more permanent.

The first thought was naturally sulphuric acid, either as a partial or total substitute. The results obtained have been quite variable, but the majority of experimenters found it unsatisfactory, or only moderately satisfactory from a sizing standpoint. The papers in which it was used lost their sizing on exposure to light more rapidly than those in which alum was used and the corrosive effect on wires and screen plates was too serious, even when it was used to the extent of only 10 per cent of the alum, to permit it to be employed.

Much attention has also been given to magnesium sulphate as an alum substitute, but without marked success. As a partial substitute it has been recommended by several, but it is suspected that the remaining alum, for which it was not substituted, was present in sufficient amount to accomplish the desired result, and that the benefit from using magnesium sulphate was more or less imaginary.

Experiments with the sulphates and nitrates of various metals have shown that under some conditions a certain degree of sizing was obtained, but the necessary conditions do not appear practical. Experiments on buffering with various salts to the pH which gives good sizing when alum is used have not been successful, nor were tests with chromium, iron and sodium sulphates. Thorium sulphate was only partially successful.

It seems reasonable to conclude that alum has a peculiar efficiency which is due to the metal rather than to the acid radicle.

Acids or Acid Salts.

Wurster (Papier Ztg. 1903 1896) recommends the use of $NaHSO_4$ to precipitate size and replace alum wholly or in part. In a later study of this subject Griffin (J. Am. Chem. Soc. *27* 258 (1905)) found that paper made with alum but no size was unsized and the same was true if the size was precipitated by H_2SO_4. Addition of precipitated $Al(OH)_3$ to the stock containing size

precipitated by H_2SO_4 gave better sizing, even though the $Al(OH)_3$ was stirred in by hand for only a few minutes. Klemm (Wochbl. Papierfabr. *38* 782 (1907)) concluded that complete replacement of alum by H_2SO_4 was unsatisfactory and that it was dangerous if used in excess. Schwalbe (Z. angew. Chem. *24* 1918 (1911)) found that paper sized with free rosin precipitated by acid was not permanently sized, possibly because the rosin particles were oxidized by light and air and converted into substances insoluble in petroleum ether.

From practical trials Rehn (Wochbl. Papierfabr. *41* 88 (1910)) concluded that paper could be sized satisfactorily with rosin size and H_2SO_4, but if the paper was too thoroughly dried trouble would ensue. This was thought to be due to the formation of hydrocellulose and consequent failure of the sizing as the paper aged. Cline (Tech. Assoc. Papers *3* 17 (1920)) found the paper poorly sized, even when enough sulphuric acid to equal the cost of the alum was used. This is confirmed by Roschier (Papier-J. *16* 108 (1928)) who states that sizing cannot be accomplished as effectually with acids or acid salts as with alum. A partial substitution is recommended by an anonymous writer (Papier *25* 134 (1922)) who first adds sufficient H_2SO_4 to decompose the $CaCO_3$ of the water in the beater. After adding the size more acid is added to decompose part of the soap and finally alum is added to acid reaction. The results are said to be as good as with alum alone. Haas (Chem. Ztg. *40* 571 (1916)) states that alum or $NaHSO_4$ for sizing should be added before the size in order to acidify the pulp and inhibit the action of the saline constituents of the water on the fiber and the dilute size milk. Economic effects are not realized if the size is added first.

Sieber (Papier-Fabr. *14* 133 (1916)) found that substituting H_2SO_4 to the extent of 30 per cent of the alum employed gave paper of moderately good sizing which was destroyed on moistening and calendering. If only 10 per cent was used the sizing was good, even after calendering, but the harmful effect on wires and screen plates was too great to permit its use. $NaHSO_4$ gave fair but undependable results and it had a bad effect on the color of the paper and the life of the wires. Shaw (Paper Trade J. *81* No. 10, 59 (1925)) found that the use of H_2SO_4 to give the proper pH did not give good good sizing. He considers a certain amount of colloidal $Al(OH)_3$ to be necessary to effect sizing, but the amount is a minimum at the optimum pH and any excess has no favorable effect on sizing. Lorenz (Papier-Fabr. *21* 221 et seq. (1923)) finds that if rosin size is precipitated by dilute H_2SO_4 at about 50 degrees the precipitate agglomerates to a viscous mass which becomes brittle in a few minutes and he believes this may account for poor sizing in hot beaters, since the coating of the fibers tends to crack. He also found that with aluminum chloride as a precipitant there were zones of flocculation. With increasing concentration a zone of flocculation was followed by an unflocculating one and then by a second flocculating zone. In making board from cornstalks Sweeney (Bull. 102, Iowa Eng. Expt. Sta. 1931) found that satisfactory sizing could not be obtained when using H_2SO_4 below a pH of 3.5 or above 6.8. It was not practical to use the acid alone, but it could be used to adjust the water to the proper pH and alum then used to complete the sizing.

MAGNESIUM SALTS.

Next to sulphuric acid as an alum substitute, probably the greatest amount of attention has been given to magnesium sulphate. As early as 1905 Griffin (J. Am. Chem. Soc. *27* 258 (1905)) reached the conclusion that any precipitant having an alkaline base as Ca, Pb, Zn, etc., was ineffective as a sizing agent, even though the rosin was completely precipitated. Pauli (Wochbl. Papierfabr. *42* 2791 (1911)) used $MgSO_4$ in commercial trials and found that it had no value, whether used alone or as a partial substitute for alum. In the case of a mixture of the two the effects were due to the alum only. Sieber (Papier-Fabr. *14* 133 (1916)); also from mill tests, found that $MgSO_4$ to replace one third of the alum gave perfect sizing which was not affected by calendering. It was cheaper than alum and he considered it a promising partial substitute. Klemm (Wochbl. Papierfabr. *42* 666 (1911)) states that 0.74 part of $MgSO_4$ will precipitate as much size as 1.0 part of alum. Stock in which the size is precipated by $MgSO_4$ is neutral to alkaline in its reaction, foams and sticks to presses, etc. He concludes that it may replace part of the alum necessary to neutralize the alkali in the size, but not the alum necessary for the water used in the furnish.

Frohberg (Papier Ztg. *36* 2699 (1911)) found that $MgSO_4$ added in quantity equivalent to the alkalinity of the size did not precipitate the rosin. From a mixture of alum and $MgSO_4$ alkali precipitates the aluminum first, and precipitation with such a mixture always gives the same end point as though $MgSO_4$ alone were present. He concluded that $MgSO_4$ was not a satisfactory substitute for alum. von Possanner (Wochbl. Papierfabr. *42* 2119 (1911)) showed that brown, neutral size was not completely precipitated by $MgSO_4$, even in large excess (10 times). The precipitate contained more rosin than that corresponding to magnesium resinate.

MISCELLANEOUS.

Among the patented processes for avoiding or minimizing the use of alum are the following: Curtiss & Co. (Brit. Pat. 4067 Feb. 18, 1910) use a mixture of $MgSO_4$, $NaHSO_4$ and $Al_2(SO_4)_3$. Brauner & Kollmann (Fr. Pat. 435,013 Oct. 9, 1911) precipitate the usual rosin size by an acid gas, as CO_2, and neutralize the Na_2CO_3 formed by alum. They claim that CO_2 equivalent to 5 per cent of the alum usually employed is sufficient and that 12 per cent of the usual alum is enough to neutralize the Na_2CO_3. Zellkoll Ges. (Brit. Pat. 147,002, July 6, 1920) employs easily dissociated organic salts of aluminum, such as formate, acetate, etc., instead of alum. The salts may be added as such, or the barium salt may be added, followed by alum. Spencer (U. S. Pat. 1,714,052 May 21, 1929) uses a colloidal solution of $Al(OH)_3$ instead of the usual alum solution. It is made by precipitating $Al(OH)_3$ from $Al_2(SO_4)_3$ with NaOH and peptizing with a weak acid, as CO_2.

Oeman (Svensk Pappers-Tidn. *30* 651 682 (1927)) carried out experiments on the effect of adding nitrates and sulphates of various metals to mixtures of fiber and size. If in contact for a sufficient length of time and if the salt concentration was maintained at such a point that the rosin would not leave the fiber again on diluting, a certain degree of sizing was obtained with many of these. Sodium sulphate was considered promising for papers where acid conditions should be avoided. When acid was used instead of the salts a high degree of sizing was obtained, but the acidity was much greater than when alum was used.

According to the theory of Thiriet and Delcroix other salts, which buffer the stock at a pH from which alum readily gives good sizing, should be sizing agents and the rosin retention should be greater within the sizing range of pH. Edge (Paper Maker's Monthly J. *67* 50 (1929)) tried sodium acetate and acetic acid to buffer, and added

acetic acid slowly to vary the pH right through the usual sizing range, but failed to produce a single sized sheet and the rosin content of the sheets was the same regardless of the pH value. Thorium sulphate gave about half the sizing effect of alum and 4 to 5 times as much was required. Chromium, iron, and sodium sulphates were tried without success. It seems that alum has a peculiar efficiency which is due to the metal, rather than the salt, since the chloride or acetate in acetic acid is as effective as the sulphate.

Acidity or pH Value

Much time has been spent on a study of pH values in connection with sizing and the variable results obtained indicate that pH determinations are not the cure-all that they were first thought to be. It has been shown that the acidity for maximum precipitation of alumina is not necessarily the same as that for the best sizing; also that a certain pH secured by means of acid may give entirely different results from the same pH caused by the use of alum. It is emphasized by several writers that the best pH for one mill may not be the best for another and that it must be determined by experiment in every case. General experience seems to indicate that the pH should be about 7.0 before adding the size and alum and 4.5 to 5.5 afterward. The pH for maximum sizing depends on the materials used, the order in which they are added and the conditions of drying or heating.

Studies have been made of the absorption of rosin by fibers during different times of contact and at different acidities, but sheets were not made, so absorption was not correlated to actual sizing.

The excess of alum is believed to have an effect on the composition of the precipitate formed, but apparently enough was always used to insure sizing, as the pH was not over 5.0 in any case.

The amphoteric nature of cellulose is discussed and the displacement of its isoelectric point by either acid or alkaline treatment is noted. The interesting theory is also proposed that over a certain range of pH cellulose and rosin are oppositely charged and that sizing is possible by mutual attraction.

One of the early papers to discuss the effect of pH on sizing is that of Shaw (Paper Trade J. *81* No. 10, 59 (1925)) who found that the maximum precipitation of alumina occurred at 5.0 to 5.5 depending on the amount of alum used. If H_2SO_4 was used to give the same pH, good sizing did not result. Mueller (Paper Trade J. June 13, 1929) claims that the best pH for precipitating size is 5.5, but that this does not necessarily give the best sizing results. Lorenz (Papier-Fabr. *26* 365, 427 (1928)) considers that to obtain good sizing results it is necessary that the pH be 7.0 or over before the size and alum are added, while Bennett, Ltd. (Pulp Paper Mag. Can. *30* 724 (1930)) state that generally good sizing conditions are to have the stock before adding the alum and size at a pH of 6.5 to 7.5 with an average of about 7.0, and to have the white water at the tray of the paper machines test from 4.5 to 6.0 with an average of 5.0. If the stock is acid before the size is added local coagulation of size will take place with loss of efficiency.

Hansen (Paper Mill *52* No. 40, 3 (1929)) states that the best pH for sizing may not be the same in every mill and that it should be determined in each case. It will probably be between 4.0 and 6.5. Decreasing the pH increases the rate of deterioration of the paper and the corrosion of the machinery. Edge (Paper Maker's Monthly J. *67* 50 (1929)) finds that if the pH is controlled by adding successive amounts of alum solution after the size, the maximum sizing is at a pH of 5.0, but if the alum solution is added in excess, after the rosin, and the pH is then adjusted by means of NaOH the maximum is at 4.0. Decrease in sizing is more rapid with an excess of acid than with an excess of alum. In experiments on wet hand made sheets Oeman (Svensk Pappers-Tidn. *31* 536, 570 (1928)) found that the pH of the stock was without influence if the sheets were air dried only, but a pH of 5.0 was found best for sheets with 75 per cent moisture heated to 85 degrees for either 15 or 30 seconds. Alkaline conditions gave very poor results.

In a series of experiments carried out by Olsen and Gortner (Paper Trade J. *87* No. 16, 47 (1928)) they found that at a pH of 4.8 the absorption of rosin by the fibers increased up to 60 minutes contact. If the pH is changed by varying the alum, rosin absorption increases from a pH of 3.8 to a maximum at about 5.5 and then falls sharply as the pH rises to 7.5. With purified soda fiber the maximum was at about 4.1 to 4.3. If the alum used is kept constant and the pH is changed by adding sulphuric acid, the maximum absorption is at 6.5 to 7.2 and with purified soda fiber there is a constant drop in absorption in passing from a pH of 2.0 to one of 5.5.

The effect of the acidity of the stock on the size has been studied by Roschier (Pappers-Travarutid. Finland. No. 4 1927) who found that if the acidity were high—pH 3.7 to 3.9—the combined rosin formed but little aluminum resinate, which was immediately held by the fibers. They also absorb some aluminum ions, which, with the aluminum resinate imparts a positive charge to the fiber and enables it to hold the negatively charged free rosin. Under these conditions a large proportion of the alum is lost in the back water. If the acidity is low—pH 4.5 to 5.0—the sodium resinate is changed chiefly into aluminum resinate, and excess of alum is hydrolysed to $Al(OH)_3$ containing very little free sulphuric acid. This is electro-positive and combines with the colloidal free rosin, this compound, as well as the aluminum resinate, being fixed by the negatively charged fibers. Under these conditions the back water is practically free from alum. In a second paper the same author (Papier-Fabr. *27* 444 (1929)) states that if rosin size is decomposed by the addition of acid or excess alum and the pH then adjusted to 4.5 to 5.0 by alkali a large part of the rosin remains in the free form, with, however, some $Al(OH)_3$ present, which governs the absorption of the free rosin.

Wieger (Papier-Fabr. *28* 113 (1930)) states that if size is added to an acid beater, flocculation occurs before the size is properly distributed and the coarse flocs are held simply mechanically. In an alkaline beater the size is distributed uniformly without flocculation and the fine particles formed on precipitation are more likely to unite with the fibers and do useful work. He claims that dispersions of 10μ particle size have no sizing effect; the best particle size seems to be about 1μ.

Oeman (Svensk Teknisk Tid. *22* 176 (1925)) finds sulphite and sulphate pulps to be amphoteric substances. Sulphite pulp in weakly acid solution is positively charged and in a weakly alkaline solution (pH 9.6) it is negatively charged. Its isoelectric point is between 5.5 and 6.0 when the pulp is subjected to acid treatment, but if OH ions are added its isoelectric point is displaced toward the alkaline side. In another paper the same author (Papier-Fabr. *23* 725 et seq. (1925)) states that cellulose steeped in 0.015 N H_2SO_4, washed and immersed in water, requires several times as much alkali to bring the pH of the water to 8.0 as when unsteeped cellulose is used. As no H_2SO_4 can be detected it is ascribed to a combination of the cellulose with H ions. Cellulose so treated is electropositive and combines with rosin without alum being

present. When alum is used Al is absorbed and makes the cellulose electropositive.

Thiriet and Delcroix (Chimie & industrie Spl. No. 567 (May 1924)) propose the theory that over a certain range of pH (4.5-5.0) cellulose and rosin have electric charges of opposite sign so that sizing is possible by mutual attraction. Outside this range, the electrolyte is too acid or too basic, the rosin and cellulose are charged similarly and sizing is impossible.

In a general summary of sizing investigations Oeman (Svensk Pappers-Tidn. *28* 534 et seq. (1925)) discusses the value of determining the H ion concentration. Escourrou (Chimie & industrie *20* 1039 (1928)) also gives a brief discussion of pH values, water, etc.

Water

The effect of hardness in water on the preparation of emulsions is discussed. It is claimed that hard water may ruin a perfectly prepared emulsion and that flocculation depends on the concentration of the hardening agents and not on the amount of water, so that at sufficient dilution even calcium hydroxide will not cause precipitation. Some evidence is given in relation to the amount of rosin precipitated by hardness and it is claimed that some of the alkaline earth resinates are held in suspension by the Na_2CO_3 formed by the reaction.

Numerous data are presented regarding the precipitating power of various salts in the water and it seems to be established that for salts of a given acid, magnesium causes precipitation at lower concentrations than calcium. In the case of $CaSO_4$ contradictory evidence is presented.

Several methods for minimizing the effect of hardness are mentioned and the most favored one seems to be the use of protective colloids with the size. The use of vegetable oil soap is mentioned and also the beneficial effect of sodium resinate in the size.

To cope with hardness in the beater it is recommended that the alum, or part of it, should be added before the size and that the latter be added as late in the process as possible. It is also stated that the temperature of the beater should be low.

No attention seems to have been given to seasonal variations in the water supply nor to the effect of organic matter derived from decaying vegetable matter.

Making Emulsions or Solutions.

von Possanner (Papier-Fabr. *8* 221 (1910)) states that hard water may ruin a perfectly prepared emulsion and Lorenz (Papier-Fabr. *23* Festheft 129 (1925)) recommends the use of distilled water for sizing if the regular supply is hard, as it gives finer dispersions than water with 0.2 per cent $MgSO_4$. Schneider (Paper Trade J. *72* No. 18, 48 (1921)) claims that with hard water the emulsion, after standing a little while, will deteriorate, and that for good sizing a temperature of 38 degrees must not be exceeded, because aluminum resinate begins to gather into bigger lumps at this temperature. According to Klemm (Wochbl. Papierfabr. *36* 768 (1905)) the results on diluting size with hard water depend on the salts present. With water containing carbonates the diluted size is rich in free rosin and resinates of the alkaline earths, but these are held in suspension by the Na_2CO_3 formed by the reaction of hard water on the soap.

Lorenz (Ver. Zellstoff Papier Chem., Hauptversamml. 1924 78) states that the flocculation of size in hard water depends on the concentration of the hardening agents and not on the quantity of the water. The system is most stable at high dilution—at sufficient dilution alkaline earth hydroxides will not cause precipitation. Klemm (Wochbl. Papierfabr. *36* 768 (1905)) finds that sulphate waters cause precipitation, and with such waters the size should be employed in fairly strong solution.

According to Ridley (Paper Maker's Monthly J. *66* 415 (1928)) the amount of rosin deposited from solution by hard water is not in direct proportion to the increase in hardness, but increases more rapidly than the hardness because of weakening of the stabilizing film of sodium resinate. The rate of separation of rosin increases more rapidly with water containing permanent hardness alone than when both are present, because the Na_2CO_3 set free by the action of temporary hardness on the sodium resinate reacts with the permanent hardness and prevents it from affecting the resinate.

According to Edge (World's Paper Trade Rev. *96* 1868 (1931)) the precipitate formed on diluting a rosin solution with a large amount of hard water is a mixture of normal calcium resinate, ill-defined acid resinates, and free rosin. The ash content and ether solubility of the precipitate vary according to the conditions of precipitation. Colloidal solutions of rosin do not precipitate on diluting with hard water.

Effect of Different Salts.

Arledter (Papier Ztg. *37* 300) states that small quantities of chlorides seem beneficial, but larger amounts, especially $MgCl_2$, and $CaCl_2$, are harmful, as resinates are precipitated which are not effective in sizing. Arnould (Papier *24* 108 (1921)) claims that the presence of 0.043 per cent of NaCl in the pulp may completely prevent sizing by the rosin-alum method. According to Lorenz (Zellstoff Papier *5* 300 (1925)) if water is at 10 degrees of hardness because of the presence of $MgCl_2$ or $MgSO_4$ (equivalent to 178.6 p.p.m. of $CaCO_3$) immediate and complete flocculation of the size takes place. $CaCl_2$ is only slightly less active; magnesium bicarbonate acts more slowly and calcium bicarbonate still more slowly, while $CaSO_4$ causes no flocculation. If all six are mixed in equimolecular amounts to give a solution of 10 degrees of hardness no flocculation occurs. In the case of harder water flocculation is more rapid the more concentrated the size emulsion. Schwalbe (Z. angew Chem. *24* 1918 (1911)) on the other hand, says that 0.6 gm., per liter of $CaSO_4$ is enough to precipitate 70 per cent of the total rosin and that 1¼ gms. of NaCl, or 0.1 gm. of Na_2SO_4 per liter is enough to flocculate a rosin emulsion. He repeats Arledter's statement that the alkaline earth resinates have little value in sizing. Griffin (J. Am. Chem. Soc. *27* 258 (1905)) had already claimed that paper whose stuff had been treated with hard water, or to which $CaSO_4$ had been added could not be sized effectively.

Sieber (Zellstoff Papier *1* 15 et seq. (1921), *2* 99 et seq. (1922)) finds that precipitation is caused by alum at a concentration of 2.61 millimols per liter (0.893 gm. per liter $Al_2(SO_4)_3$) and by calcium and magnesium salts at 25 and 15 millimols respectively. With 1 gm. of rosin soap per liter complete precipitation is caused by 0.12 gm. of $CaCl_2$, 1.53 gm. of $CaCO_3$ or 0.03 gm. of $MgCl_2$. The action of a mixture of $CaSO_4$ and $Al_2(SO_4)_3$ on 1 per cent rosin solution gave a precipitate with 5.45 per cent of ash (63.9 per cent Al_2O_3 and 35.8 per cent CaO). $Al_2(SO_4)_3$ and MgO gave a precipitate with 4.3 per cent ash (41 per cent Al_2O_3 and 59 per cent MgO), but a precipitate caused by $Al_2(SO_4)_3$ and H_2SO_4 contained only 0.1 to 0.7 per cent of ash and most of the Al_2O_3 was found in the filtrate. As compared with these figures Lorenz (Papier-Fabr. *23* Festheft 129, 1925) states that at least 0.5 gm. of $MgSO_4$ per liter is required to precipitate com-

pletely and rapidly commercial rosin size containing 1 gm. of rosin per liter and that only 20 per cent of the hardness forming substances disappear.

MINIMIZING THE EFFECT OF HARDNESS.

Teicher (Wochbl. Papierfabr. *55* 650 (1924)) explains the action of the salts of the alkaline earths by saying that they tend to remove OH ions from the size solution by forming precipitates of the alkaline earth hydroxides, thus affecting the degree of dispersion of the rosin and causing flocculation. The unfavorable effect of hardness may be reduced by the removal of hardness salts, by preventing side reactions by neutralization of the OH ions by CO_2 and by the use of protective colloids. Lorenz (Ver. Zellstoff Papier Chem., Hauptversamml. 1924, 78) also considers the use of colloids the best means of preventing flocculation, but points out (Papier-Fabr. *27* Fest Auslandsheft 113, (1929)) that the addition of sodium sulphate or potassium sulphate to water containing calcium or magnesium salts, especially sulphates, will retard the precipitation of the size. The greatest effect is at a concentration of 9-10 grams per liter in the case of Na_2SO_4, but it is not great enough to be of value where very hard water is used. Schacht (Papier Ztg. *33* 666 (1908)) states that the use of 3 to 5 per cent of vegetable oil soap is beneficial where hard water is used, as it gives a finer emulsion, and Zhereboff (Bumazhnaya Prom. *2* No. 4, 391-414 (1923)) points out that only vegetable and animal fats and oils are active as protective colloids, mineral oils being detrimental. Ridley (Ind. Chemist, *6* 369 (1930)) considers the presence of sodium resinate to be beneficial as an emulsifying agent during dilution with hard water.

HARDNESS IN BEATERS.

From various theoretical considerations Chintschin (Bumazhnaya Prom. *11* 10 (1929)) concludes that carbonates in hard water are not harmful, since they aid in swelling the cellulose and form precipitates with free rosin which have sizing value. The same author (Papier-Fabr. *28* 517 (1930)) states that hardness should give no trouble in sizing if the diluted size is thoroughly and rapidly mixed with the stock, but in an earlier paper (Zellstoff Papier *5* 299 (1925)) expresses the opinion that coagulation of the rosin size is possible with hard water when the paper stock is diluted highly enough. Lorenz (Ibid) in reply to this says that precipitation is independent of the dilution of the size, but is influenced by the compounds in the water, Mg salts being more effective than Ca compounds. In the case of Ca hardness Lorenz (Papier-Fabr. *23* Festheft 129 (1925)) recommends that alum be added before the size; with Mg hardness a little alum should be added before the size, but most of it afterward. Haas (Chem. Ztg. *40* 571 (1916)) advises adding $NaHSO_4$ or alum before the size in order to inhibit the action of the saline constituents of the water on the fibers and dilute size solution. He claims that it is not economical to add the size first.

In contrast to these views Strachan (Paper Maker & Brit. Paper Trade J. *82* No. 3, 4, 5 (1931)) claims that the presence of calcium ions in the water plays a very important part in the economy of rosin sizing. When a molecule of CaO is present to every one of Al_2O_3 adsorption of the rosin-alumina complex is much stronger; this is attributed to the stronger positive charge of the Ca ions.

When hard water must be used Schacht (Papier Ztg. *33* 666 (1908)) recommends having the stock as thick as possible in the beater.

Chintschin (Papier-Fabr *28* 517 (1930)) suggests that if the water is soft the addition of alkali to the beater may sometimes assist sizing. According to Mueller (Paper Trade J. June 13, 1929) the water used has a decided influence on the ratio of alum to size, since most of the alum is used in bringing the water to such a pH that the rosin will precipitate. Lorenz (Wochbl. Papierfabr. *60* Sondernummer 23A 81 1929) states that if alkaline water must be neutralized it is better to use sulphuric acid than an acid alum, and from work on cornstalks for boards Sweeney, Hartford, Richardson and Whittemore (Iowa Eng. Expt. Sta. Bull. 102 (1931)) found that if sizing is done at a pH of 4.8 after the alum is in, the most basic water gave the best results because of the greater amount of alum used.

TEMPERATURE.

Muth (Dingl. polyt. J. *290* 261) remarks that when the temperature of the water in the beater is high poor sizing may result because the particles of rosin unite to form larger masses which do not coat the fibers continuously. His remedy for this is to allow the size to run in the beater only a short time and to dry the paper very gradually. Moody (Paper Trade J. *44* No. 1, 48 (1907)) in a general discussion of sizing problems, remarks that hot water in the beaters "softens" the stock and injures the sizing. He also calls attention to the fact that if the water is reused, foaming may be caused by the accumulation of dextrin from the colors used. Mueller (Paper Trade J. June 13, 1929) cites a case where poor sizing was corrected by cooling the beater contents to about 43 degrees. Sweeney, Hartford, Richardson and Whittemore (Iowa Eng. Expt. Sta. Bull 102 (1931)) state that raising the temperature of the stock by steam admission after sizing at 28 degrees seems to improve sizing somewhat. If the temperature of sizing is the same as that of board forming, higher temperatures are practically without effect.

Beating

Comparatively little has been published regarding the effect of beating on sizing, but it is known to be the general opinion that sizing increases with beating. There is some evidence that this is dependent on the method of testing for the sizing of papers, though the point has not been positively proved.

Berger (Paper Maker Brit. Paper Trade J. *76* Annual No. 59 (1928)) states that the resistance of paper to the penetration of ink increases with the beating, especially between 50 and 70 degrees Schopper-Riegler, where the slimy character of the mucilage begins to be manifest. Edge (World's Paper Trade Rev. *89* 616 (1928)) finds that the beneficial effects of beating are strongly marked only when the sizing tests are made by colloidal solutions like ink. If the test is made with ferric chloride and ammonium thiocyanate, (Stöckigt's method) increase in wetness due to beating shows remarkably little improvement in sizing. In other experiments Edge (World's Paper Trade Rev. *92* 1974 (1929)) found that when 0.7 per cent of rosin was used and operations carried out at a pH of 5.0, sizing increased with the wetness up to 35 degrees, after which increasing wetness was without effect.

Bennett, Inc. (Service Notes No. 7, March 1931) believe that the presence of rosin in the beater retards the hydration of the stock and recommend adding the size in the later stages of the beating cycle in order to get a stronger and better sized sheet.

(To be continued)

Obituary

William H. Andrews

BOSTON, Mass., November 27, 1933—William H. Andrews, salesman for the Agar Manufacturing Corporation, paper box makers, Somerville, Mass., died of pneumonia at the Cambridge (Mass.) Hospital recently. Before he was connected with the Agar company, he was a salesman for the Poinier-Carner Company, box board dealers, Boston. His residence was at 7 Chisholm Road, Winchester, Mass.

Mr. Andrews, who was 46 years old, was married in Somerville to Miss Marion Colburn. He had been a resident of Lexington, Mass., nine years before removing to Winchester five years ago, where he was active in dramatics in the Winchester Congregational Church and Masonic and Odd Fellows societies.

Joseph P. Reardon

KALAMAZOO, Mich., November 27, 1933—Joseph P. Reardon, aged 50, vice president of the Bermingham & Prosser Company, 508 East Frank street, died at his desk in the office of that concern recently of a heart ailment. He had been in the best of health up to that time, although subject to heart attacks.

Mr. Reardon, who was born in St. Louis, came to Kalamazoo from Kansas City, Mo., sixteen years ago as a salesman for the Bermingham & Prosser Company. Three years ago he was made vice president of the concern.

Surviving is the widow, Catherine; a son, Joseph P. Reardon, Jr., and a sister, Mrs. Lou Rothers, St. Louis.

Mr. Reardon was a member of St. Joseph's Church and belonged to the Elks and Knights of Columbus lodges.

Ben Pill

SIOUX CITY, Iowa, November 27, 1933—Business man here for a quarter of a century, Ben Pill, aged 70, one of the founders of the Pill Bros. Company, general paper merchants, died at his home on November 15 following a lingering sickness.

Mr. Pill had been ailing since last summer with high blood pressure. With his brother, Max, he organized the wholesale paper concern here in 1901, which they operated together until 1914 when Max retired. From that date until his death, Ben Pill and his sons operated the company.

Born in Lithuania in 1863, Ben Pill came to the United States in 1888. He lived on a farm in Nebraska for several years and then moved to Omaha. In 1901 he moved to Sioux City. The wholesale paper company, although small at first, grew apace with the progress of the city. Mr. Pill retired from active business in 1925.

Crystal Tissue Co. Makes Good Report

DAYTON, Ohio, November 27, 1933—The Crystal Tissue Company has reported net profits amounting to $21,916 after all charges and taxes, for the nine months up to September 30, according to figures just released. This compares with a loss of $18,646 in the corresponding period of 1932.

For the quarter ended September 30, net profits after charges, but before Federal taxes, were $34,059, compared with a deficit of $2,533 for the third quarter of last year.

The total assets of $308,633 and total curcent liabilities of $95,837 are reported in the balance sheet dated September 30, 1933.

Business Good at Milton

MILTON, N. H., November 27, 1933—The Milton Leather Board Company of Milton, N. H., has enjoyed a very favorable share of business since the C. F. Jameson & Co. Inc., came here a few years ago and took things over. The mill has had an ever increasing amount of business and has been able to run full time, giving the men steadier and more employment than they have had in this town for the past decade. So far this year has been true to form and bids fair to surpass all previous years.

A considerable amount of credit is attributed to M. J. Guild, manager of the company, who came here with quite a long experience as a paper mill superintendent in Richmond, Va.

Mr. Guild's resourcefulness was clearly demonstrated recently. He was faced with the problem of making furnace and boiler repairs before cold weather. Shutting down meant no production for, at best, two weeks, and the tieing up of unfilled orders, beside the new orders coming in. A lot of men might have figured that it had to be done and no getting around it. They would probably have shut down and hustled the job through as quickly as possible. Not so, however, with Mr. Guild. He is that type of man that no matter what comes up, he says, "There is some good way around this," and he starts thinking.

The mill derives its power from a steam engine and a water wheel, so Mr. Guild got in touch with the Boston & Maine Railroad, hired a locomotive, had it set on the mill siding and piped it to supply steam, heat and hot water for processing purposes. Then, with the ready cooperation of the Public Service of New Hampshire, he got an increase in the amount of water necessary to guarantee sufficient power during the repair period.

This combination worked very nicely and licked that mill man's bugaboo "loss production."

Merritton Plant Damaged by Fire

TORONTO, Ont., November 27, 1933—Fire of undetermined origin swept the process plant and storehouse of the Garden City Paper Company at Merritton, Ont., on November 17, causing damage of from $75,000 to $100,000. The fire broke out in a room used for storing paper to be loaded on trucks for shipment. The blaze spread rapidly and a water line formed by employees was useless. When the fire departments of St. Catharines and Merritton arrived, the building was a mass of flames. Fanned by high winds, flames shot out through the spacious plant, the tissue paper stock making excellent fodder for the blaze. A carload of wax, housed in the rear was also consumed. The loss is covered by insurance and the plant will be rebuilt.

Gets Patent on Milk Bottle Cap

FULTON, N. Y., November 27, 1933—Invention of an ingenious hood cap for milk bottles and similar containers is credited by the U. S. patent office to Wilbur L. Wright of Fulton, N. Y., who has just been awarded a patent on the device.

Government patent examiners credit Wright with conceiving 11 new ideas and improvements in connection with his invention, which is described as a "sheet fibrous material hood cap carrying a quick-setting, hard, water-resistant plastic binder composition that embodies a smaller per cent of sulphur."

Manufacturing rights in the patent have been assigned by Wright to the Oswego Falls Corporation, also of Fulton.

Bids on Government Paper

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., November 29, 1933.—The Government Printing Office has received the following bids for 36,000 pounds of white mimeograph paper; Allied Paper Mills, at 6.305 cents per pounds; Dill & Collins Company, 5.5 cents; Bryant Paper Company, 5.33 cents; Old Dominion Paper Company, 4.243 cents; Perkins-Goodwin Company, 4.74 cents; Aetna Paper Company, 4.37 cents; Dobler & Mudge, 4.22 cents; American Writing Paper Company, 5.90 cents; Virginia Paper Company, 5 cents; Jessup & Moore Paper Company, 4.7 cents; Reese & Reese, Inc., 5.047 cents and 5.297 cents; R. P. Andrews Paper Company, 5 cents; and Barton, Duer & Koch Paper Company, 5.11 cents.

For 38,800 pounds of 50 per cent rag white index paper; Collins Manufacturing Company at 9.79 cents per pound; Old Dominion Paper Company, 9.99 cents and 9.78 cents; Perkins-Goodwin Company, 9.58 cents; Aetna Paper Company, 9.15 cents; American Writing Paper Company, 12 cents; Crocker-McElwain Company, 9.25 cents; Barton, Duer & Koch Paper Company, 9.47 cents; and R. P. Andrews Paper Company, 9.41 cents.

For 34,125 pounds of white sulphite writing paper; Aetna Paper Company, 4.40 cents per pound; Cauthorne Paper Company, 4.64 cents; Whitaker Paper Company, 4.47 cents; R. P. Andrews Paper Company, 5.5 cents; and Barton, Duer & Koch Paper Company, 5.12 cents.

For 38,850 pounds of mimeograph paper; Jessup & Moore Paper Company, 3.97 cents per pound; Bryant Paper Company, 4.75 cents; Old Dominion Paper Company, 4.22 cents; Perkins-Goodwin Company, 4.48 cents; Aetna Paper Company, 3.95 cents; Whitaker Paper Company, 4.23 cents; Dobler & Mudge, 4.22 cents; American Writing Paper Company, 5.75 cents; R. P. Andrews Paper Company, 5.75 cents; and Barton, Duer & Koch Paper Company, 4.69 cents.

For 10,000 sheets white railroad board; R. P. Andrews Paper Company, $62.20 per M sheets; Whitaker Paper Company, $69.20; Dobler & Mudge, $69.15; Reese & Reese, Inc., $52.35; Old Dominion Paper Company, $70.59; Barton, Duer & Koch Company, $69.00; Virginia Paper Company, $69.20; Mathers-Lamm Paper Company, $63.89; Charles G. Stott & Co., $69.20.

Awards for Government Paper

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., November 29, 1933—The following paper awards have been announced by the Government Printing Office.

The Aetna Paper Company has been awarded the contract for furnishing the Printing Office with 81,500 pounds (1,000,000 sheets) of white sulphite writing paper at 4.42 cents per pound, bids for which were received on November 16.

Barton, Duer & Koch Paper Company will furnish 168,000 pounds (2,000,000 sheets) of 25 per cent rag mimeograph paper at 4.92 cents per pound, bids for which were received on November 15.

Aetna Paper Company will furnish 34,000 pounds of white sulphite writing paper at 4.57 cents per pound, bids for which were received on November 14.

The Cauthorne Paper Company will furnish 71,750 pounds (500,000 sheets) of white sulphite writing paper at 4.67 cents per pound and Barton, Duer & Koch Paper Company will furnish 50,000 pounds of manila calendered tag board at 6.5 cents per pound. Bids for these two items were received on November 10.

Barton Duer & Koch Paper Company will furnish 250,000 pounds of manila tag board at 6.5 cents per pound and the Mathers-Lamm Paper Company will furnish 1,065 sheets of blue gummed paper at $12.01 per M sheets. Bids for these items were received on October 20.

The R. P. Andrews Paper Company will furnish 213,750 pounds of white sulphite bond paper at 4.89 cents per pound.

Titanium Pigments

The Titanium Pigments manufactured by the Titanium Pigment Company, Inc., of 111 Broadway, New York, N. Y., are now designated by the following names:

Titanox-A (Titanium Dioxide). This pigment is the commercially pure oxide of titanium. It was previously designated as Pure Titanium Oxide.

Titanox-B (Titanium Barium Pigment). This pigment consists of 25 per cent Titanium Dioxide precipitated upon and coalesced with Blanc Fixe. It was previously designated as Titanox-B (Barium Base).

Titanox-C (Titanium Calcium Pigment). This pigment consists of 30 per cent Titanium Dioxide precipitated upon and coalesced with Calcium Sulphate. It was previously designated as Titanox-C (Calcium Base).

Other than in the above designations there are no changes in these pigments, the composition and physical characteristics remaining the same. Some time may be required to replace present warehouse stocks which are packed in bags bearing the old designations.

Titanox-A (Titanium Dioxide) is now quoted at 17 cents per pound in bags and 17¼ cents per pound in barrels, carloads, f.o.b. works.

Titanox-B (Titanium Barium Pigment) and Titanox-C (Titanium Calcium Pigment) are now quoted at 6 cents per pound in bags and 6¼ cents per pound in barrels, carloads, f.o.b. works.

Union Bag Salesmen Meet at Hudson Falls

[FROM OUR REGULAR CORRESPONDENT]

HUDSON FALLS, N. Y., November 27, 1933.—During the past week many representatives of the Union Bag and Paper Corporation, in various parts of the country attended a sales school conducted at the local plant. The conference opened early in the week and a number of sessions were held. It was the first time in several years that the school was conducted here and it is understood that business methods came in for considerable discussion during the sessions. About 25 salesmen were in attendance at the conference.

Another shift of workers is expected to be placed in effect in the mills of the company soon with the inauguration of the paper code under the Recovery Act. It is expected that about 50 more hands will be taken on although no official announcement has been made by officials. Members of the various unions held a meeting last week to discuss the proposition whether or not they would continue to work Sundays and the vote has already been forwarded to Superintendent Gamble in New York city.

Postpone Sale of Malone Paper Co.

MALONE, N. Y., November 29, 1933.—The sale of the Malone Paper Company plant and property, which was scheduled to take place November 17 at the office of the company in Malone, has been adjourned until Friday, December 15, at 10 A. M., by order of the receivers, Louis Bittner, Clarence E. Kilburn and Charles H. Clarke.

The postponement of the original date of sale was made because plans are under way by which it is hoped to reorganize the company and further time was desired for these plans to be fully matured.

Model E Stiffness Tester

How stiff or pliable are these materials? Engineering executives and technicians have many times asked this important question. They know that thickness, density and hardness are all factors that radically influence the rigidity of materials, but how much? This effect can now be scientifically determined with the new Smith-Taber Precision Stiffness Tester.

The extreme sensitivity and unique design of this instrument makes possible accurate measurement of the plastic flow that takes place within a deflected specimen. This enables the elastic or spring-like properties of materials to be analyzed and gives a definite rating.

This flow characteristic makes necessary a division of the term stiffness to "Initial Stiffness" and "Basic Stiffness," also the injection of the time element, when performing the basic test. Basic stiffness is determined by following the initial reading by others taken at three minute intervals, continuing until the plastic flow has practically ceased. The specimen remains bent at the standard angle throughout the duration of the test. The stiffness usually becomes stabilized within three to thirty minutes time, depending upon the thickness and kind of stock undergoing test. The Eastman Photo Timer provides an excellent means for timing the intervals. The readings may be charted on cross-section paper and the resiliency of the specimen rated on a percentage basis.

After the first basic test has been made before proceeding to test the opposite side, it is advisable momentarily to bend the test strip in the opposite direction in order to neutralize the opposing effect caused by the plastic flow that occurred within the specimen during the preceding test. In testing for initial stiffness only, this operation is not necessary, providing the strip is relaxed promptly after the first flexure.

Tungsten steel contact points prevent stressing the specimen beyond the standard 22½ degree angle, also form the electrical contact which flashes a brilliant signal the moment the full bend occurs, thus indicating the position where the reading is to be taken.

The 200 graduation dial and three ranges of sensitivity (20-200-2000 units) provide for accurate testing of a wide classification of materials. The 20 unit range is for testing unusually pliable materials such as thin paper, cellophane, metal foil, fabric, imitation leather, etc., and is secured through the use of a standardized attachment substituted for the pendulum clamp bar. Sensitivity of one-fiftieth of a stiffness unit is possible with this attachment.

Each instrument is standardized with the master gauge at the factory. Results from two or more instruments under similar testing conditions, should be exactly alike regardless of geographical location.

New features of Model E include—a bi-metal pendulum suspended on double ball-bearings specially designed for precision instruments, twin weight for increasing the capacity of the pendulum from 200 to 2000 units, counterbalanced operating lever with adjustable pre-loading brake in hub. The base rests on four large rubber pads adjustable in height for leveling purposes.

An interesting circular describing the Model E Precision Stiffness Tester may be obtained by applying to Smith-Taber, research engineers.

Hammermill Pays Regular Dividend

The Hammermill Paper Company has declared the regular quarterly dividend of $1.50 on the preferred stock, payable January 2 to stock of record December 15.

Carthage Paper Mills More Active

[FROM OUR REGULAR CORRESPONDENT]

CARTHAGE, N. Y., November 27, 1933.—Conditions in a number of paper mills in this section continue to show improvement and the outlook is considered by manufacturers to be fairly satisfactory. A survey completed here shows that conditions compare favorably with those of a year ago and an upward tendency is now noted in many instances. Virtually all of the mills in this section are now in operation while at this time a year ago a few of them were closed because of a lack of orders. The improvement in mill conditions has already made itself felt in local business establishments where sales are reported much greater than a year ago.

Operations at the National Paper Products Company, the Island Paper Mills and the Braman Manufacturing Company, are being conducted on a scale similar to that of a year ago. The Champion branch of the St. Regis Paper Company was closed about a year ago but is now again in operation. A small machine was started last December at the plant of the Carthage Pulp and Board Company by the newly organized Carthage Papermakers Inc., and expansion plans are now under way which will allow capacity production.

Holyoke Unions Reach No Settlements

[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, Mass., November 28, 1933—Repeated conferences between members of Eagle Lodge papermakers and other unions allied with the paper manufacturing industry have not as yet reached a settlement. Eagle Lodge Sunday voted not to accept the wage schedule tendered by the manufacturers but to request Adam Wilkinson, labor commissioner for the American Writing Paper Company, Inc., to hold further conferences.

The members of the lodge claim that members of the unions in the paper industry should receive as much for 40 hours under the NRA code as they received for the former schedule of 48 hours a week. The new schedule does not quite reach this figure. It comes but part way, hence the disagreement.

It will be retroactive in any case so no labor trouble is expected retroactive from November 27.

H. F. Badgley To Represent Brownville

The Brownville Board Company, Brownville, N. Y. is now being represented in the Metropolitan district by H. F. Badgley, 30 Church street, N. Y. Brownville is well known for its popular grades of tag, X, XXX, and Moosehead.

Mr. Badgley is also representing Bergstrom Paper Company, Neenah, Wis., on its several grades of book; Riverside Paper Corporation, Appleton, Wis., on bonds, mimeographs, and sulphite specialties and Harding-Jones, Excello, Ohio, on high grade rag bonds and ledgers.

Westminster Mill Installs Drier

[FROM OUR REGULAR CORRESPONDENT]

VANCOUVER, B. C., November 24, 1933—Installation of a new 51,000 pound drier at the plant of the Westminster Paper Company, Ltd., New Westminster, B. C. has just been completed. The drier is being installed for use in case of possible break-down of the present drier, as a delay of three months would be caused in having a new unit shipped to the coast and installed. The new drier is 10 feet in diameter and has a face of 11 feet, weighing over 25 tons.

CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Finances and Operation of Paper Mills

Construction News

Columbus, Ohio—The Ohio Waxed Paper Company, 780 Ferbis avenue, has plans for a new one-story addition to plant, about 17 x 30 feet, and will proceed with erection at once. New unit will be used for the manufacturing department.

Brooklyn, N. Y.—The R. & F. Paper Box Company, Inc., recently organized with capital of $10,000, by Max Ruskin, 588 Bedford avenue, and Louis Feidelside, 139 East Fifty-third street, both Brooklyn, plans operation of local plant for manufacture of paper boxes and containers, cardboard specialties, etc.

Cleveland, Ohio—The Industrial Rayon Corporation, West 98th street and Walford avenue, manufacturer of cellulose rayon products, is considering construction of new additions to mill, comprising new manufacturing and utility buildings, reported to cost over $1,000,000, with machinery. Proposed to have plans prepared in near future. Negotiations are under way with city for extension in sewage system to serve the plant, estimated to cost close to $300,000, and the work will begin as soon as this part of program is assured.

Green Bay, Wis.—The Fort Howard Paper Company has approved plans for new one-story addition to power plant for mill service, about 30 x 60 feet, and will place work under way at early date. New equipment will be installed.

Chicago, Ill.—The Central Waxed Paper Company, 5659 West Taylor street, has taken out a permit for construction of new addition to plant, location noted, to be used for general operating and office service. General contract has been let to the R. L. Brockob Construction Company, 815 South Cicero avenue. William Sevic, 1900 Blue Island avenue, is architect.

Dallas, Tex.—The Trinity Paper Box Company, recently organized by H. B. Thomas, Jr., Republic Bank Building, and associates, plans operations of local plant for manufacture of paper boxes and containers. Production is scheduled to begin at early date. J. L. Gadberry, Dallas, is interested in new organization.

Marcus Hook, Pa.—Congoleum-Nairn, Inc., Kearny, N. J., manufacturer of hard surface floor coverings, roofing, etc., has taken bids on general contract for new addition to plant at Marcus Hook, reported to cost close to $25,000, with equipment. Proposed to begin work at an early date. W. W. Lindsay & Co., Harrison Building, Philadelphia, are engineers.

Batavia, N. Y.—The Techni-Seal, Inc., recently chartered with capital of $25,000, has taken over local property and will occupy at once for paper converting plant for the manufacture of seals, labels and kindred paper goods. Large capacity is planned. New company is headed by Ward B. Manchester, 50 Tracy avenue, Homer A. Harvey and Frank E. Brooks, all of Batavia. Last noted was previously connected with F. E. Mason & Sons, with local plant for manufacture of kindred paper goods.

Wellsburg, W. Va.—The S. George Company, Railroad street, manufacturer of paper bags, paper sacks and similar containers, is pushing work on new plant addition, recently referred to in these columns, and will have unit ready for service late in December. It will be one-story, 110 x 153 feet, reported to cost about $90,000, with equipment. Building work is being handled by the Austin Company, Union Trust Building, Cleveland, Ohio.

Muskegon, Mich.—Officials of the Central Paper Company, Lake Shore drive, have organized a new subsidiary interest under name of Central Dock & Coal Company, with capital of 500 shares of stock, no par value, to operate local dock and terminal in conjunction with paper mill.

Newark, N. J.—The Eastern Paper Box Company, Inc., lately organized with capital of 100 shares of stock, no par value, plans operation of local plant for the manufacture of paper boxes and containers. New company is represented by Samuel S. Ferster, 31 Clinton street, Newark.

Whippany, N. J.—The Whippany Paper Board Company, Inc., recently organized under state laws, as noted in these columns, will be headed by officials of Frank Desiderio Sons, Inc., 262 Jefferson street, Newark, N. J., including Domenick, Anthony and Thomas Desiderio, and will be operated in conjunction with the Desiderio company, which has an extensive waste paper business. Property taken over at Whippany a number of months ago will be occupied by the new company for the manufacture of paper board and paper board specialties.

New Companies, Etc.

Chicago, Ill.—Standard Fibres, Inc., Room 2116, 134 North LaSalle street, has been incorporated with capital of 200,000 shares of stock, no par value, to manufacture fibre products. The incorporators are James P. Haffner, Milton Gerwin and Greydon L. Walker.

Milwaukee, Wis.—The Excel Company, Milwaukee, has filed notice of change of company name to the Bouer Paper Company.

Worcester, Mass.—Herman Westerman, Inc., has been incorporated with nominal capital of $2,000 to deal in paper bags and containers, and allied products. Edward L. Faber is president, and Herman Westerman, 94 Winter street, treasurer and representative.

St. Paul, Minn.—The Northwest Hemp Corporation, Inc., has been organized to manufacture hemp and flax fiber products. The incorporators are E. G. Pauly, R. H. Lundquist and C. E. Southwick, 240 Transportation Building Annex, Minneapolis, Minn.

PAPER TRADE JOURNAL
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PAPER AND PULP INDUSTRY UNDER THE NRA CODES

A new era in the paper industry was ushered in on Monday of this week. At that time the General Paper Code and the News Print Code, which codes had been signed a week earlier by the President, becomes operative. All branches of the paper industry are thus now operating under the NRA codes, the Paperboard section having started operations under its code Monday of the preceding week.

While members of the industry appreciate that they have set out on an untried experiment, there is a pretty uniform feeling that it will be successful and they are determined to lend the fullest measure of cooperation to that end. This attitude is the correct one to take because it must be remembered that the codes are law and must be carefully followed out whether or not they meet with approval.

Because of the lack of precedents many puzzling questions and many perplexities will naturally arise. The factors of cost and price will naturally be among the more perplexing problems that will have to be settled. For this reason the views of Professor Tugwell, a member of the President's brain trust, on these two factors expressed in an article entitled "What the New Deal Means to You," in the current issue of *Liberty* are more than ordinarily interesting. Professor Tugwell is briefly quoted as follows:

"This brings us up against the secret crisis of recovery. If all the enterprises in our business system pass these costs, as manufacturers figure them, on to their consumers and if nothing is done to bring industrial prices into line with farm prices, we are headed ultimately for a worse depression than the present one.

"Anybody who thinks that we are going to restore prosperity by raising prices all around is due for disillusionment. If there were more efficient industrial production, added wage or tax costs could be absorbed without adding to the sales price of the product. Any practical view of the cost of production shows that it is no excuse for high prices.

"Cost of production simply cannot be used as the basis for fair prices. Imagine the problem of the government official who was asked to find the cost of production of steel rails and of wheat. He would have to gather *all* of the facts from several hundred steel plants and from over a million wheat growers.

"Every steel plant and every wheat farm would have different costs. He would have to decide which set of costs to choose, and whatever he decided would be questionable. If he had to do the job in a year, it would take more expert accounts than there are. The Interstate Commerce Commission spent years and millions of dollars trying to value the railroads in order to determine their operating and capital costs, and never finished the job. The Department of Agriculture tried to discover the cost of farm production and gave it up after years of futility. The job is too slow; it is too laborious, too expensive; experts disagree; and by the time it is done the items of cost have changed so that it has to be done over.

"The real trouble is that any statement of costs is based on imputed values. Any good statistician can slip in everything but the kitchen stove when he tries to reckon costs. Everybody goes misty-eyed over what is elegantly known as "overhead," which may and often does include charges for unprofitable and foolish investments, for excessive depreciation, and for capitalized profits and surpluses in the past. If we try to find the costs of production in industry, we enter a kind of fairyland of economics in which there are no landmarks for the discovery of reality.

"According to most cost statements, few prices are high enough. We can't trust business to tell us its costs, and we can't find them out for ourselves.

"For entirely different reasons we can't use cost of production as a yardstick to measure fair prices for farm products. The farmer frequently doesn't realize his own costs. He may lengthen his hours of labor, or include the labor of his family, without ever dreaming of charging for it. When prices drop, he may stop buying fertilizer or spend less time in cultivating his farm, and so be mining his land and living on his capital. He may add to his costs of production in a thousand different ways and still not know it and be unable to pass them on to the consumer.

"That is why we must base our prices not on costs, but on relationships with other prices. When one important product costs so much that the man who makes another important product can't afford to buy it, then the price of the first is too high and must be brought down."

That the perplexities, however, caused by these two factors as well as others will be satisfactorily cleared up is demonstrated by the fact that the steel industry, after a

test of its code for ninety days, has expressed a liking for it. It has requested the President for permission to continue the code for another six months. This obviously means that the experiment is working out fairly well in the greatest basic industry of the country and is a hopeful sign that it can be applied successfully in the paper industry.

The Paper Authority, the American Paper and Pulp Association, has on its hands a big job. Judging, however, from the work in connection with the code that it has already accomplished, it will be equal to the task imposed upon it if the industry in general continues to cooperate as sincerely and as generously in the future as it has in the past several months.

Development of Chile's Paper Industry

Production of paper and paper products has made notable progress in Chile during the past two years, according to a report from Consul F. B. Atwood, Santiago, made public by the Commerce Department.

Outstanding factors in this development, it is pointed out, have been depreciated Chilean currency and Government control of exchange, making it extremely difficult for paper consumers to obtain their supplies from foreign sources.

Prior to the establishment of rigid exchange control by the Government in July, 1931, Chile imported more than 70 per cent of its paper requirements. Today the Chilean paper industry represents invested capital of 24,000,000 pesos (about $2,160,000), and includes plants manufacturing newsprint, writing and wrapping papers, as well as cardboard, pasteboard and strawboard.

Production of printing and writing paper in Chile rose from 2500 metric tons in 1927 to 2,840 metric tons in 1932 while the output of wrapping paper increased from 2,867 tons to 8,037 tons. These figures do not include cardboard, pasteboard or strawboard which are being produced in large quantities. It is estimated that 1933 production will substantially exceed that of last year, the report states. Imports of paper and paper products into Chile have fallen from a peak of 29,000 metric tons in 1929 to less than 5,000 tons in the first eight months of the current year.

Owing to the absence of raw materials in the country, Chile's paper industry has to import large quantities of foreign wood pulp. Such imports amounted to 11,000 tons in 1932. Imports for the first eight months of 1933 totalling 7,336 tons indicate that the 1932 imports will be exceeded in the current year.

Moore & Thompson Improvements

[FROM OUR REGULAR CORRESPONDENT]

BELLOWS FALLS, Vt., November 27, 1933.—The extensive alterations and changes that have been in progress in the beater room equipment at the Moore & Thompson Paper Company's plant are now completed and all the beaters are again in full operation. The mill operates on kraft papers, one machine turning out practically nothing but No. 1 bag kraft and the other machine running on gummed kraft, kraft toweling, etc. To produce the tonnage and quality required it was necessary to modernize and improve the beater equipment, and this work which was turned over to the Dilts Machine Corporation of Fulton, N. Y., has occupied some weeks time. The plant is busy and prospect for continued steady operations are promising.

Third Quarter Earnings of International Paper and Power Co. Show Increase

The International Paper and Power Company reports that consolidated gross sales in the third quarter of this year were $37,329,985 compared with $30,249,610 in the third quarter of last year; net revenue including other income, before charges, was $11,844,557 against $8,249,605; and a net profit of $431,259 after all charges including depreciation, compared with a net loss of $3,001,567 in the third quarter of 1932.

In the first nine months of this year consolidated gross sales were $99,014,558 against $97,376,379 in the corresponding period of last year; net revenue including other income, before charges, was $31,112,439 compared with $29,164,555; and a net loss of $3,343,231 after all charges including depreciation, against a net loss of $5,257,371 in the first nine months a year ago.

Comparative consolidated statements are as follows:

Quarter Ended September 30	1933	1932
Gross sales	$37,329,985	$30,249,610
Net revenue, including other income	11,844,557	8,249,605
Less: Interest, income taxes, and subsidiary dividends paid or accrued	7,854,165	7,934,254
Depreciation, depletion, amort. of disc...	2,634,445	2,633,101
Accumulated unpaid sub. divs. and minority interests	924,688	683,817
Net profit	431,259	3,001,567*

* Loss

Nine Months Ended September 30	1933	1932
Gross sales	$99,014,558	$97,376,379
Net revenue, including other income	31,112,439	29,164,555
Less: Interest, income taxes, and subsidiary dividends paid or accrued	23,718,540	24,464,065
Depreciation, depletion, amort. of disc....	7,959,972	7,979,190
Accumulated unpaid sub. divs. and minority interests	2,777,158	1,978,671
Net loss	3,343,231	5,257,371

(In the above statement all figures have been stated at parity of exchange without adjustment of differences between foreign and United States funds. It is the practice of the Company to take into current operations any profit or loss on exchange at the time funds are actually transferred.)

In his remarks to shareholders, Archibald R. Graustein, president, says:

"For the third quarter there was a net profit after all charges of $431,259. This is the first net profit for any quarter since September 30, 1931.

"Volume of shipments was larger than during any previous quarterly period in the history of International Paper Company, and prices for most grades except newsprint were somewhat above the low levels of last winter. Increased volume was due partly to replenishment of customers' inventories and probably will not be fully maintained during the fourth quarter.

"Additional working capital requirements arising from this increased volume of paper and pulp business have been met without new borrowing.

"At September 30, 1933, notes payable amounted to $18,541,081 of which $16,239,000 represented debt of International Paper Company and subsidiaries and $2,302,081 debt of New England Power Association and subsidiaries."

Brotherhood Elects Officers

[FROM OUR REGULAR CORRESPONDENT]

ALBANY, N. Y., November 27, 1933—Announcement was made here last week that Matthew H. Burns, of this city, had been elected to serve a third term as president of the International Brotherhood of Paper Makers. Among the other officials that will serve with him are the following: Frank P. Barry, first vice president, of Ballston Spa; George J Schneider, 2nd vice president, of Appleton, Wis.; Joseph A. Addy, 3rd vice president, of Troy; John W. Bailey, 4th vice president, of Holyoke, Mass.; Arthur Daust, 5th vice president, of Ottawa; James P. Nichol, 6th vice president, of Thorold, Ont.

AUTOMATIC CONTROL WINS!

Taylor System of Temperature Control Increases Wood Pulp Production of Grinder 8.9%. *Let Taylor Help you Make Similar Economies*

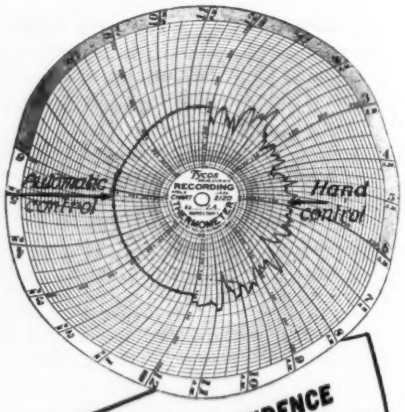
RECENTLY a large mill decided to determine accurately the merits of Taylor Automatic Temperature Control over hand control on their grinders.

They made a test. Results of grinder operation under manual control were recorded and compared with those obtained with the Taylor System of Automatic Control for a period of several weeks.

Automatic Control won on every count. Not only was production increased 8.9%; the quality of the paper produced under Taylor Control was uniformly better. The Mullen or pop test showed consistently from 2 to 3 points higher than paper made from pulp produced under hand control! Stone costs were cut, too.

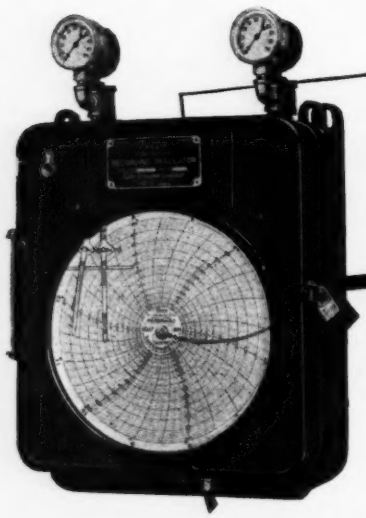
Aren't these economies you would like to effect in your plant? The Taylor System of Automatic Control can do as much for your grinders, or more. Naturally, the exact percentage of improvement will vary, but it will assuredly increase grinder production and give you pulp more uniform in texture, freeness, color and strength.

Let us tell you more about this Taylor System. Write Taylor Instrument Companies, Rochester, N.Y., U.S.A., or Taylor Instrument Companies, Ltd., Toronto, Canada.



HERE'S THE EVIDENCE

Compare the ragged, uneven temperature line on the right that results from hand control with the smooth, practically perfect line charted under Taylor Automatic Control.



HERE'S THE INSTRUMENT

Heart of Taylor Grinder Control is this Recording Regulator—latest model of the industry's first successful control system. Installations throughout U. S. and Canada are giving mills more efficient and economical grinding.

SPECIAL

TAYLOR NEWS FLASH

All Taylor Temperature and Pressure Recorders and Recording Regulators are now being shipped with a newly-designed die-cast case. The instrument mechanism inside contains distinct improvements designed to give industry the most modern, accurate and durable temperature and pressure control equipment. More detailed information on these new Taylor Instruments later. Meanwhile, if you are using them, enjoy their fine accuracy and positive operation.

† Tycos **Taylor** TEMPERATURE and PRESSURE INSTRUMENTS

† The name Taylor now identifies our complete line of products including Tycos instruments.

INDICATING • RECORDING • CONTROLLING

Section of the
Technical Association of the Pulp and Paper Industry
Edited by Ronald G. Macdonald, Secretary

Haug Refiner Versus Attrition and Jordan Type Refiners*

By Anton J. Haug[1]

Abstract

A brief description is given of the new refiner invented by the writer.

The action which has long been recognized by many to give the best results for pulping is one of rolling and pressing. The Chinese used to hammer their bast fibers to give them strength and flexibility. The ancient hammer or stamp mills of the early paper makers produced excellent results but they were slow and cumbrous. Much of the beneficial action of the rolling and pressing principle was retained in the Kollergang, a machine which was the result of efforts to mechanize this principle. It is considered up to this day a machine capable of making good pulp from pulp tailings. Its awkward construction, low capacity, high power consumption and intermittent operation with necessary attendance is against its use by modern mills.

The introduction of the attrition type of refiner, first of the vertical and later of the horizontal construction into particularly the ground wood pulp industry marks the outstanding attempt for a continuous refiner, in the early years of modern pulp making. It attained in several modifications wide use, especially in Europe. The fact that the pulp industry adopted this machine in spite of its very high power consumption, low efficiency coupled with its inability to make a good grade of stock in one passage showed how vital the pulping of tailings was to the mills, and how difficult a problem it seemed to be to reduce tailings to good pulp. In looking over systems employing such machines few realize the extent to which the screen load on the system is increased over and above the excessive power consumption of the refiners themselves, when an attempt is made to produce a grade of stock which can be mixed with the regular stock. In such systems sometimes as much as 30 to 40 per cent of slivers are circulated through the screening system. As a consequence it becomes necessary then to decrease the perforations in the screen plates, thin the stock and handle a much larger volume, and it is a fact that 2 to 4 times as much screening and power equipment becomes necessary over what should be normally used.

Received October 2, 1933.
* Presented at the fall meeting of the Technical Association of the Pulp and Paper Industry, Appleton, Wis., September 26-28, 1933.
[1] Member TAPPI, Pulp Mill Machinery Manufacturer, Nashua, N. H.

Rod mills have also been used for refining tailings but the results obtained have not justified the publicity these machines once had. For refining ground wood tailings which is the real test for a refiner, they were a failure but they got by under easier conditions. In these machines the rods roll and fall on each other crushing the material suddenly between two convex surfaces of the small diameter rods which present a line contact, and this harsh treatment has a tendency to break the fibers.

No radical improvement was obtained by any of the several modifications of the jordan type of refiner. A large part of the refined stock as discharged by the machine is not usable and has to be screened out and returned once more for refining. On ground wood particularly these machines fail because they merely break up the slivers into smaller ones, and use up a large amount of power. The dirt which is always part of tailings is not worked up well enough and is still objectionable in the finished paper sheet.

The Haug Refiner (Fig. 1) consists of a cylindrical shell in which rolls are made to run around on the inner circumference. The material to be refined comes under the action of these rolls which press it and draw it out repeatedly and it is fed through the machine by a series of flights. Every particle of the material is subjected to an

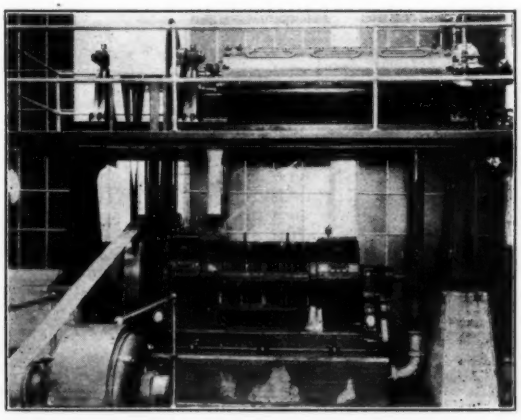


Fig. 1.

equal degree of treatment which is made dependent on the job to be done. This principle makes it possible to control the quality of the refined stock easily and instantly and maintain it at any desired degree.

In the development of the Haug Refiner unit an important feature has been introduced into the scheme of refining, namely the part which is played by the consistency of input. A specially constructed machine, therefore, called the drainer is used in connection with this refiner. (See Fig. 2.) The drainer takes the tailings from the screens and increases their consistency to an amount suitable for the particular degree of refining desired. A further function of the drainer is to feed the tailings evenly and in the proper form for best refining.

This apparatus is an important auxiliary to the refiner because any refining action responds to changes in the consistency of the material handled. Through this machine the quality of the refined pulp may be varied at will during operation.

A further control over stock quality is obtained through change in refiner speed. It is readily seen that as the rolls are moving around in the shell they are subjected to centrifugal force which increases as the speed of the main shaft increases. This principle affords a simple means to produce varying results as to fiber length, degree of hydration and refining effect desired.

Another very helpful factor is the natural heat development of the rolling action. This assists greatly in the fiberization of the material.

Quality Tests

Classification tests which find increasing favor among the mills for evaluating pulp disclosed the following interesting results, comparing three different types of refiners:

	A modern short jordan type	A modern attrition type	Haug refiner
Unacceptable stock	46 per cent	71 per cent	.3 per cent
Freeness	500	600	150 to 175
Tensile strength	4.2	3.0	5.3

In the refining of tailings in paper mills it has been found a decided advantage to carry the degree of refining rather far so as to do away with the ever present dirt problem where the refined stock is required to be of a quality which can be mixed with the regular pulp without injuring it.

It has been determined that stock from the Haug Refiner will in no way injure the quality of the finished paper.

Sheets of news print were made. One set containing no refined stock, the other containing 2.5 per cent of refined stock from a Haug refiner, otherwise both sets were made from the same primary mixture, sulphite and ground wood.

	News containing no refined ground wood tailings	News with 2½ per cent refined ground wood tailings
Bursting strength, Mullen test.....	11	11.5
Tensile strength	2.96	2.98
Breaking length, meters.....	2730	2732

The Haug Refiner is made in several sizes, size 2 being the most popular for refining tailings. This machine will handle all the tailings of a ground wood production of 100 to 150 a. d. tons per 24 hours with a total power consumption of only 35 to 40 h. p., or about 8 to 10 h. p. per ton of refined stock.

For pulping kraft tailings the power consumption is about 5 to 7 h. p. per ton of refined stock.

Southern pine chips refined into a grade of pulp suitable for building board which according to the engineer in charge resulted "without a doubt, in a very much superior board than could be produced with any other grinding equipment they experimented with" showed a power consumption of about 2 h. p. per ton refined.

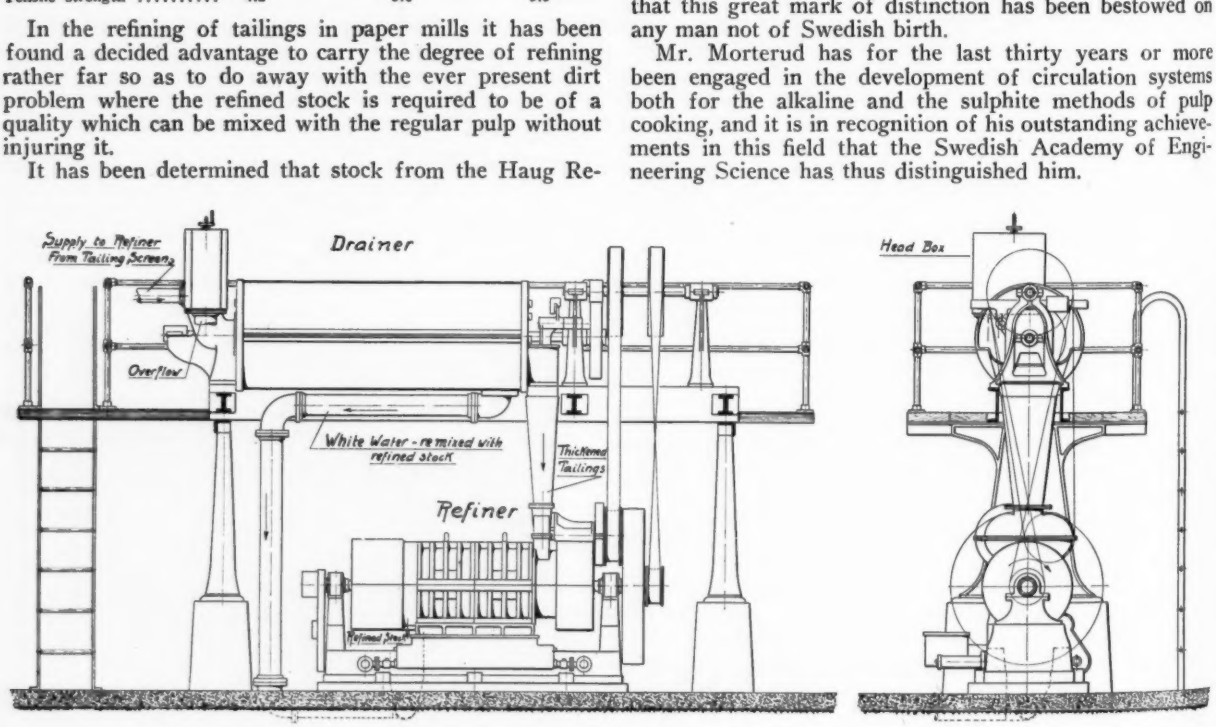
Excellent results were obtained by hydrating screened stock for greaseproof, by refining sawdust from the chippers and other material.

The Haug refiner offers promising possibilities for the improvement of manufacturing methods in other industries where either dry or wet reduction, hydration, attrition or defibering processes are required.

Einar Morterud Honored

It is reported from Stockholm, Sweden, that Mr. Einar Morterud has received the gold medal of the Swedish Academy of Engineering Science, it being the first time that this great mark of distinction has been bestowed on any man not of Swedish birth.

Mr. Morterud has for the last thirty years or more been engaged in the development of circulation systems both for the alkaline and the sulphite methods of pulp cooking, and it is in recognition of his outstanding achievements in this field that the Swedish Academy of Engineering Science has thus distinguished him.



Installation of Haug Refining Unit.

United States Patents on Papermaking

Third Quarter, 1933

Compiled by Clarence J. West, Chairman, Committee on Abstracts and Bibliography, TAPPI.

NOTE.—Copies of any of the following patents may be obtained from the Patent Office, Washington, D. C., for ten cents ($.10) each. Stamps and personal checks are not accepted.

JULY 4, 1933

1,916,203. Stencil paper. Kenneth W. Carr, assignor to Ditto, Incorporated, Chicago, Ill. Filed May 7, 1930. 7 claims. (Cl. 41-38.6).

1,916,393. Pulp screen plate. Richmond W. Smith, Walpole, Mass. Filed Sept. 23, 1931. 13 claims. (Cl. 92-30).

1,916,584. Impregnating and adhesive composition. Wilhelm Pungs, assignor to I. G. Farbenindustrie Aktiengesellschaft, Frankfort-on-the-Main, Germany. Filed Dec. 5, 1927. 9 claims. (Cl. 134-13).

1,916,606. Safety paper. William N. Doushkess, assignor to Milton C. Johnson Company, New York, N. Y. Filed Oct. 9, 1929. 7 claims. (Cl. 91-67.95). The paper carries a leuco indophenol and manganous sulphate.

1,916,664. Cutter for severing bag lengths from paper tubes. Carl H. Hartman, assignor to St. Regis Paper Company, New York, N. Y. Filed Aug. 5, 1927. 28 claims. (Cl. 93-19).

1,917,032. Photographic printing paper. Max Heinrich, assignor to Firm Graf und Co., Verpackungs-Maschinen, Berlin, Germany. Filed July 10, 1931. 1 claim. (Cl. 95-8).

1,917,098. Apparatus and process for making paper. Austin E. Cofrin, Green Bay, Wis. Filed Feb. 2, 1932. 18 claims. (Cl. 92-38). A comb-like structure precipitating seepage from the lower surface of the fourdrinier wire as a substitute for a conventional tube roll.

1,917,126. Mandrel for box-making machines. Bror Anders Emil Johnson, assignor to Aktiebolaget Gerh. Arehns Mekaniska Verkstad, Stockholm, Sweden. Filed July 11, 1931. 1 claim. (Cl. 93-59).

1,917,164. Press roll removing apparatus. Edward T. Street, assignor to Downingtown Manufacturing Company, Downingtown, Pa. Filed July 18, 1932. 6 claims. (Cl. 92-49).

1,917,168. Process for treating fibrous material. Alfred Uhlmann, Berlin-Steglitz, Germany. Filed Jan. 18, 1929. 8 claims. (Cl. 8-2). Electrolytic method of separating fats and oils from fibrous materials.

1,917,176. Process of impregnating fiber board with solid substances. Alexander Winogradow, New York, N. Y. Filed July 1, 1932. 13 claims. (Cl. 91-68). Method of precipitating a chemical within a board.

JULY 11, 1933

1,917,287. Paper making machine. Alonzo Aldrich and Earl E. Berry, assignors to Beloit Iron Works, Beloit, Wis. Filed Jan. 24, 1931. 24 claims. (Cl. 92-44). A shaking mechanism.

1,917,288. Shake mechanism for paper making machines. Alonzo Aldrich and Earl E. Berry, assignors to Beloit Iron Works, Beloit, Wis. Filed Mar. 21, 1932. 15 claims. (Cl. 92-45).

1,917,379. Automatic gloss machine. Earl M. Lowry, assignor to Eastman Kodak Company, Rochester, N. Y. Filed Aug. 2, 1926. 5 claims. (Cl. 88-14).

1,917,420. Apparatus for grinding wood. Carl Otto Backman, assignor to The Mead Research Engineering Company, Dayton, Ohio. Filed Sept. 24, 1927. 21 claims. (Cl. 83-75).

1,917,456. Multiply fibrous structure. Alfred O. Mickelson, assignor to Asphalt Process Corporation, New York, N. Y. Filed Apr. 29, 1929. 6 claims. (Cl. 154-2).

1,917,505. Method of hydrating cellulose fibers. Judson A. De Cew, assignor to Process Engineers, Inc., New York, N. Y. Filed Nov. 23, 1929. 5 claims. (Cl. 92-20). Use of a plurality of Jordan type refining machines.

1,917,545. Combined acid and alkali process of fiber liberation. George A. Richter, assignor to Brown Company, Berlin, N. H. Filed May 1, 1929. 10 claims. (Cl. 92-11).

1,917,558. Method of and means for the manufacture of containers of paper or like materials and lids or covers therefor. Cyrus Taylor, Hartford, Conn., and Elmer Zebley Taylor, Newark, N. J. Filed Mar. 27, 1929. 5 claims. (Cl. 93-39).

1,917,092. Sulphur burner. Isaac Benzowitz, assignor to Texas Gulf Sulphur Company, New York, N. Y. Filed July 16, 1931. 14 claims. (Cl. 23-276).

1,917,693. Production of sulphur dioxide. Isaac Bencowitz, assignor to Texas Gulf Sulphur Company, New York, N. Y. Filed July 16, 1931. 15 claims. (Cl. 23-179).

1,917,755. Method of making rubber-fiber articles. Bradley Dewey, assignor to Dewey and Almy Chemical Company, Cambridge, Mass. Filed Aug. 6, 1932. 15 claims. (Cl. 91-68). Deposition of latex rubber in a permeable fibrous structure.

1,918,055. Water marking device. Willis J. Pippert, Ridlonville, Maine. Filed July 8, 1930. 19 claims. (Cl. 92-48). Rubber-coated roll.

1,918,095. Process and apparatus for making paper. Rudolph C. Germanson and Frederick Kranhold, assignors to Paper Patents Company, Neenah, Wisconsin. Filed Dec. 19, 1932. 13 claims. (Cl. 92-40). Process of filling a paper web as part of one continuous paper making operation.

1,918,181. Digestion of fibrous material. Hervey G. Cram, assignor to Maine Seaboard Paper Company, Bucksport, Maine. Filed Dec. 31, 1932. 6 claims. (Cl. 92-7). Digester is filled with liquor under a pressure at least approximating the desired cooking pressure and steam is introduced to effect the cook.

JULY 18, 1933

1,918,246. Packing pad. Robert W. Burrows, assignor to William K. Jaquith, Petaluma, Calif. Filed Aug. 13, 1930. 7 claims. (Cl. 154-54).

1,918,250. Method of producing alpha cellulose. Joaquin Julio de la Roza, Sr., Tuinucu, Cuba. Filed June 28, 1930. 3 claims. (Cl. 92-11). Use of sugar cane fiber.

1,918,418. Method of producing abrasive paper and the like. Carl Münch, Duren, Germany. Filed Sept. 9, 1931. 1 claim. (Cl. 91-68).

1,918,459. Method and apparatus for the digestion of fibrous material. Thomas Leonidas Dunbar and Albert Darius Merrill, Watertown, N. Y. Filed Nov. 21, 1931. 30 claims. (Cl. 92-7). Method of preheating sulphite cooking liquor.

1,918,462. Apparatus for impregnating coarsely fibrous materials to be worked up into building elements. Konrad Erdmann, Radenthein, Austria. Filed Dec. 11, 1931. 5 claims. (Cl. 91-43).

1,918,514. Screen type flow evener. Earl E. Berry, assignor to Beloit Iron Works, Beloit, Wis. Filed May 2, 1932. 19 claims. (Cl. 92-44).

1,918,558. Method for the treatment of plants, parts of plants and raw fibers. Hendricus Plant, Wassenaar, Netherlands. Filed Dec. 6, 1932. 8 claims. (Cl. 92-14). Combined acid-alkaline treatment.

1,918,621. Separating apparatus. Carl Busch Thorne, Hawkesbury, Ontario, Canada. Filed Dec. 7, 1931. 7 claims. (Cl. 92-35).

1,918,781. Sized pulp stock and product therefrom. Walter H. Randall, assignor to Fidelity Trust Company, Portland, Maine. Filed June 24, 1929. 23 claims. (Cl. 92-21). A sizing mixture for pulp solution, comprising a fibrous medium having a substantial impregnation of unmodified size.

1,918,782. Method of and apparatus for forming molded pulp articles. Walter H. Randall, assignor to Fidelity Trust Company, Portland, Maine. Filed Aug. 31, 1931. 19 claims. (Cl. 92-57).

1,919,140. Process for the production of clean paper pulp from old printed paper. Robert Weber, Drentwede, Bezirk Bremen and Franz Kinnebrock, Hameln, Germany; said Kinnebrock assignor to said Weber. Filed Nov. 13, 1930. 21 claims. (Cl. 92-13). Use of alkaline earth compounds.

JULY 25, 1933

1,919,201. Screen for paper stock and the like. William B. Clements and George P. Burggraf, assignors to Bryant Paper Company, Kalamazoo, Mich. Filed Mar. 24, 1932. 15 claims. (Cl. 92-30).

1,919,289. Method and machine for use in paper making industry. William E. Beach, Riverside, Ill. Filed Nov. 16, 1931. 15 claims. (Cl. 92-20). Machine for handling slush stock and preventing dehydration.

1,919,321. Paper drier. John Warren Vedder, assignor to Rice, Barton and Fales, Incorporated, Worcester, Mass. Filed Dec. 29, 1930. 3 claims. (Cl. 34-48).

1,919,329. Purification of cellulose. Carleton Henningsen, assignor to Du Pont Rayon Company, New York, N. Y. Filed Jan. 16, 1928. 12 claims. (Cl. 260-10). An alpha cellulose.

1,919,518. Machine for winding paper belts. Joan Herman Anne Kruimel, Bloemendaal, Netherlands. Filed Oct. 31, 1931. 6 claims. (Cl. 242-65). Machine for winding paper webs.

1,919,604. Method of forming composite boxes. John S. Stokes, assignor to Stokes and Smith Company, Philadelphia, Pa. Filed Sept. 8, 1930. 17 claims. (Cl. 93-43).

1,919,697. Impregnated product and process for making the same. Frazier Groff, assignor to Carbide and Carbon Chemicals Corporation, New York, N. Y. Filed Oct. 26, 1931. 17 claims. (Cl. 92-21). Vinyl resin impregnated cellulosic product.

1,919,787. Carton forming machine. Emil G. Jurgens and Hazen K. Becker, assignors to Peters Machinery Co., Chicago, Ill. Filed June 19, 1931. 7 claims. (Cl. 93-51).

1,919,798. Apparatus for coloring and decorating paper. James Donald MacLaurin, assignor to Marathon Paper Mills Company, Rothschild, Wis. Filed Feb. 15, 1930. 2 claims. (Cl. 91-45).

1,919,843. Paper machine wire and method of making same. Charles Johnson, Montreal, Quebec, Canada. Filed June 8, 1931. 4 claims. (Cl. 140-3).

1,920,081. Laminated rigid structural material. Robert John, New York, N. Y. Filed June 2, 1933. 7 claims. (Cl. 154-50).

1,920,129. Fiber storage and preservation. Treadway B. Munroe and Elbert C. Lathrop, assignors to The Celotex Company, Chicago, Ill. Filed June 11, 1930. 5 claims. (Cl. 92-5). Method of piling bales for storage.

AUGUST 1, 1933

1,920,191. Method of and system for impregnating articles. Ben K. Ford and Maurice A. Lamme, assignors to Western Electric Company, Incorporated, New York, N. Y. Filed June 6, 1930. 5 claims. (Cl. 91-70).

1,920,239. Process of preparing cellulose. Antonio Bayarte Bori and Jose Martinez Estape, Habana, Cuba, assignors to said Estape. Filed May 14, 1931. 16 claims. (Cl. 92-14). Preparation of alpha cellulose from various canes.

1,920,292. Pulp molding machine. Merle P. Chaplin, assignor to Fidelity Trust Company, Portland, Maine. Filed March 29, 1928. 25 claims. (Cl. 92-57).

1,920,340. Manufacture of coated papers. Frank William Bailey, Sydney Francis William Crundall and Howard Spence, assignors to Peter Spence and Sons, Limited, Manchester, England. Filed July 28, 1931. 6 claims. (Cl. 91-68). Clay and anhydrous calcium sulphate.

1,920,392. Pulp beating engine. Edouard Héry, Paris, France. Filed Apr. 25, 1931. 1 claim. (Cl. 92-24).

1,920,481. Manufacture of fiber sheets and apparatus therefor. Daniel Manson Sutherland, Jr., Morrisville, Lower Makefield Township, Bucks County, Pa. Filed Apr. 8, 1931. 7 claims. (Cl. 92-61). Pulp mold.

1,920,496. Insulating or wall board product. Carroll E. Carpenter, assignor to United States Gypsum Company, Chicago, Ill. Filed Aug. 23, 1928. 3 claims. (Cl. 92-3).

1,920,541. Process for saturating fabric. Joseph Zavertnik and Alexander A. MacCubbin, assignors to The Barrett Company, New York, N. Y. Filed Sept. 11, 1929. 9 claims. (Cl. 91-68).

1,920,718. Paper cutting machine. Karl Stegmann, assignor to Kohne-Werk Grafische Maschinen-Aktiengesellschaft, Bautzen, Germany. Filed Jan. 13, 1930. 9 claims. (Cl. 164-59).

1,920,809. Method of producing box or container parts having a curved bottom. Johannes Schmiedel, assignor to the Firm Universelle Cigarettenmaschinen-Fabrik, J. C. Muller and Co., Dresden, Germany. Filed Feb. 18, 1930. 8 claims. (Cl. 93-36).

1,920,810. Process for making cigarette cartons. Johannes Schmiedel, assignor to the Firm Universelle Cigarettenmaschinen-Fabrik, J. C. Muller and Co., Dresden, Germany. Filed Sept. 23, 1930. 6 claims. (Cl. 93-39).

1,920,881. Manufacture of tubes from paper, cardboard and the like materials. George Calvert Paton and James Stanley Paton, assignors to James Stanley Paton, Liverpool, England. Filed Oct. 15, 1931. 4 claims. (Cl. 164-69).

1,920,931. Roofing material. Dozier Finley, assignor to The Paraffine Companies, Inc., San Francisco, Calif. Filed Feb. 17, 1930. 3 claims. (Cl. 91-68).

1,920,942. Paper manufacture. Harold Robert Rafton, assignor to Andover Process Corporation, Andover, Mass. Filed Aug. 26, 1931. 23 claims. (Cl. 92-38). Alkaline filler.

AUGUST 8, 1933

1,921,080. Deinking apparatus. Grant Hammond, New Haven, Conn. Filed Jan. 31, 1930. 21 claims. (Cl. 92-20).

1,921,217. Safety device. James T. Coghill, assignor to The Noble and Wood Machine Company, Hoosick Falls, N. Y. Filed Sept. 12, 1932. 13 claims. (Cl. 92-50). Valve for shutting off water supply to felt.

1,921,269. Paper box machine. Edwin G. Staude, Minneapolis, Minn. Filed March 10, 1924. 9 claims. (Cl. 93-52).

1,921,289. Apparatus for burning sulphur. Lowry Gillett, assignor to General Chemical Company, New York, N. Y. Filed Feb. 10, 1927. 2 claims. (Cl. 23-278).

1,921,368. Process of coating paper. Peter J. Massey, River Forest, Ill. Filed May 29, 1930. 11 claims. (Cl. 91-68).

1,921,369. Method of coating paper. Peter J. Massey, River Forest, Ill. Filed Nov. 4, 1931. 7 claims. (Cl. 92-40).

1,921,371. Method of producing puffed pulp. Joseph E. Plumbstead, assignor to The Jessup and Moore Paper Co., Philadelphia, Pa. Filed Oct. 3, 1930. 13 claims. (Cl. 92-13).

1,921,504. Composite web and method of making the same. Henry Albert Chase and Harold Ray Titus, assignors to **Brown Company, Berlin,** N. H. Filed Apr. 27, 1928. 9 claims. (Cl. 92-41). An absorbent reenforced pulp web.

1,921,516. Method of making tubes. Louis T. Frederick, assignor to Continental Diamond Fibre Company, Newark, Del. Filed June 20, 1930. 8 claims. (Cl. 93-94).

1,921,539. Chemical pulping process. George A. Richter, assignor to Brown Company, Berlin, N. H. Filed Oct. 27, 1931. 2 claims. (Cl. 92-9). Raw manila fiber is cooked with 2 to 3 per cent sodium carbonate and 2 per cent sodium sulphide at 335 deg. F.

1,921,540. Manufacture of glassine papers. George A. Richter, assignor to Brown Company, Berlin, N. H. Filed Sept. 19, 1932. 10 claims. (Cl. 92-11). Use of manila and sisal.

1,921,566. Production of valuable products from tall oil. Hans Franzen and Robert Held, assignors to I. G. Farbenindustrie Aktiengesellschaft, Frankfort-on-the-Main, Germany. Filed Oct. 31, 1932. 6 claims. (Cl. 87-12). Process of separating fatty acids and resinic acids.

1,921,649. Method of mottling paper. Nils Folke Becker, assignor to Rhinelander Paper Company, Rhinelander, Wis. Filed Nov. 10, 1932. 8 claims. (Cl. 92-40). Ornamental parchment paper.

1,921,750. Centrifugal separator for straining pulpy material, such as wood pulp, cellulose, paper pulp and the like. Richard Heinrich and Hans Zipprian, assignors to Carl Nebrich, Prague-Smichow, Tzechoslo. Filed Mar. 24, 1932. 9 claims. (Cl. 92-35).

1,921,757. Laminated molded product. Roy H. Kienle and William J. Scheiber, assignors to General Electric Company, Schenectady, N. Y. Filed May 29, 1931. 3 claims. (Cl. 92-40).

1,921,780. Wood fiber mass. Fritz Rühlemann, Wolfsgrun, and Otto Rudolf Herdey, Bautzen, Germany. Filed Aug. 15, 1931. 5 claims. (Cl. 92-3). Groundwood is washed and dried without substantial pressure.

1,921,819. Cellophane and fancy paper products and the like. Emanual M. Hacker, New York, N. Y., assignor of one-half to David Usdan, Lawrence, N. Y. Filed Dec. 20, 1932. 12 claims. (Cl. 154-2).

1,921,824. Forming cylinders. Erwin H. Hussey, Springfield, Ohio. Filed Feb. 24, 1931. 10 claims. (Cl. 92-43).

1,921,966. Production of wood pulp. Lemuel B. Decker, Kenogami, Quebec, Canada. Filed Feb. 13, 1932. 27 claims. (Cl. 92-6). Impregnation of the log with a sulphite liquor.

August 15, 1933

1,922,160. Process at the sulphite cellulose digestion, of removing turpentine and other volatile matters present in the chips. Gustaf Haglund, assignor to Patentaktiebolaget, Grondal-Ramen, Stockholm, Sweden. Filed Mar. 25, 1932. 8 claims. (Cl. 92-2). The volatile materials are removed during a preliminary digestion.

1,922,189. Apparatus for making paper containers. Edward C. Angell, New York, N. Y. Filed Nov. 10, 1928. 10 claims. (Cl. 93-39).

1,922,262. Process of making chemical pulp. James H. Ross, Jr., Montreal, Quebec, Canada. Filed Oct. 31, 1930. 2 claims. (Cl. 92-7). Method of maintaining optimum digesting conditions by withdrawing a portion of the liquid, adding an active agent in predetermined concentration and returning the liquid to the digester.

1,922,313. Process and apparatus for disintegration of material. William H. Mason, assignor to Masonite Corporation, Laurel, Miss. Filed June 27, 1931. 31 claims. (Cl. 92-1).

1,922,325. Manufacture of paper. Harold Robert Rafton, assignor to Raffold Process Corporation, Andover, Mass. Filed Dec. 11, 1930. 42 claims. (Cl. 92-40). Use of alkaline filler and water-insoluble precipitated sizing material.

1,922,366. Process for separating bast fibers from shives. Clark C. Heritage, Earl R. Schafer and Lynn A. Carpenter, dedicated to the Government and the People of the United States. Filed Nov. 17, 1931. 1 claim. (Cl. 92-33). Method of separating seed flax straw into two components.

1,922,501. Building product and method of making the same. Thomas Robinson, assignor to Lancaster Asphalt, Inc., New York, N. Y. Filed Nov. 23, 1929. 23 claims. (Cl. 154-2).

1,922,506. Laminated box. John S. Stokes, assignor to Stokes and Smith Company, Philadelphia, Pa. Filed Oct. 1, 1930. 34 claims. (Cl. 93-43).

1,922,670. Photographic paper. Elisha Porter Essley, Hinsdale, Ill. Filed June 17, 1929. 1 claim. (Cl. 95-8).

August 22, 1933

1,923,105. Process for the production of non-warping fiber board. William H. Mason, assignor to Masonite Corporation, Laurel, Miss. Filed Dec. 11, 1929. 6 claims. (Cl. 92-54).

1,923,106. Apparatus for the production of non-warping fiber board. William H. Mason, assignor to Masonite Corporation, Laurel, Miss. Filed Dec. 11, 1929. 9 claims. (Cl. 34-31).

1,923,121. Box folding machine. Paul R. Simmons, assignor to Indiana Fibre Products Company, Marion, Ind. Filed Feb. 25, 1932. 16 claims. (Cl. 93-49).

1,923,230. Apparatus for adjusting beater engine rolls. Christian Charles Riehm, Methuen, Mass. Filed Feb. 16, 1932. 17 claims. (Cl. 92-24).

1,923,292. Purification of cellulose materials. Harry P. Bassett, Cynthiana, Ky. Filed Aug. 31, 1931. 6 claims. (Cl. 92-9). The material is treated with 0.05 to 5 per cent nitric acid, washed with alkali and bleached.

1,923,339. Web pasting device. Allen B. Staiger, Atlantic City, N. J. Filed Aug. 21, 1930. 4 claims. (Cl. 91-51).

1,923,360. Roll drive. Edward Fitzgerald and Raymond M. Gleason, Franklin, Ohio. Filed Feb. 12, 1931. 7 claims. (Cl. 92-49).

1,923,431. Mold for fiber pulp and the like. Francis S. Farley, assignor to Daniel Manson Sutherland, Jr., Morrisville, Pa. Filed Mar. 7, 1930. 14 claims. (Cl. 92-61).

1,923,479. Pulp screening apparatus. Clarence Fancher, Hudson Falls, N. Y. Filed March 18, 1931. 24 claims. (Cl. 92-32).

1,923,622. Artificial leather manufacture. Roger B. Hill, assignor to Brown Company, Berlin, N. H. Filed Jan. 16, 1929. 2 claims. (Cl. 91-68). Fiber is impregnated with latex containing a vegetable tanning agent and concentrated waste sulphite liquor.

1,923,641. Low viscosity cellulose fiber and process of producing the same. George A. Richter, assignor to Brown Company, Berlin, N. H. Filed July 17, 1928. 17 claims. (Cl. 260-110). Cotton or wood pulp is treated with permanganate solution and the fiber digested with alkaline solution.

1,923,670. Paper machine. Harold Bond Henson and Erik Ruben Johnson, Kapuskasing, Ontario, Canada. Filed Apr. 29, 1932. 7 claims. (Cl. 242-65). Method of winding paper.

1,923,726. Impregnation process. Garabed G. Heghinian, Baltimore, Md. Filed Oct. 30, 1929. 1 claim. (Cl. 91-70). Porous building material is first treated with steam and then immersed in an impregnating liquid bath.

1,923,837. Gummed tape and method of making the same. William W. McLaurin, Brookfield, Mass. Filed Oct. 9, 1930. 7 claims. (Cl. 154-2).

1,923,888. Method of producing emulsions. Thomas Robinson, assignor to Lancaster Processes, Inc., New York, N. Y. Filed Oct. 30, 1931. 18 claims. (Cl. 92-20).

1,923,966. Method of constructing acoustic diaphragms. Joseph B. Brenna, Lexington, Mass. Filed Sept. 6, 1930. 10 claims. (Cl. 92-56). Method of molding fibrous material.

1,924,047. Constructional material. Albert C. Fischer, assignor to Philip Carey Manufacturing Company, Cincinnati, Ohio. Filed Aug. 15, 1927. 6 claims. (Cl. 91-68). Waterproof product.

August 29, 1933

1,924,100. Drier. Charles P. Barker, assignor to Container Corporation of America, Chicago, Ill. Filed Jan. 9, 1931. 4 claims. (Cl. 34-48).

1,924,142. Process and apparatus for sulphurizing paper board. William R. Willauer, assignor to Marathon Paper Mills Company, Rothschild, Wis. Filed Feb. 1, 1930. 11 claims. (Cl. 91-55). A closed tank for impregnating board with sulphur under pressure.

1,924,154. Paper machine and process of making paper. George A. Engert and George B. Gibson, assignors to Sonbert Machine Company, Chicago, Ill. Filed May 9, 1932. 28 claims. (Cl. 92-39). Sealing cap for a foraminous rotatable cylinder.

1,924,160. Machine for making blanks. Cutler D. Knowlton, assignor to Hoague-Sprague Corporation, Lynn, Mass. Filed July 21, 1928. 25 claims. (Cl. 93-58).

1,924,181. Roofing and process of manufacturing same. Roger W. Cutler, Needham, Mass. Filed June 16, 1928. 4 claims. (Cl. 154-2). Fireproofing method.

1,924,226. Method of and machine for preparing shoe stiffeners. David Baird Macdonald and Roland Baird Macdonald, assignors to United Shoe Machinery Corporation, Paterson, N. J. Filed Sept. 23, 1930. 10 claims. (Cl. 91-54).

1,924,361. Process of treating waste sulphite liquor. Guy C. Howard, Wausau, Wis. Filed Oct. 28, 1930. 9 claims. (Cl. 252-7). Waste sulphite liquor is treated with lime, the solids filtered and the filtrate subjected to steam pressure cook.

1,924,472. Method of and means for manufacturing sound absorbing material. George Miller Thomson, Caledonia, Ontario, Canada. Filed Nov. 28, 1930. 10 claims. (Cl. 154-28).

1,924,483. Method of and means for separating cellulose or the like from treating liquid. Walter Claus and Erwin Schmidt, assignors to Zellstoffabrik Waldhof, Mannheim-Waldhof, Germany. Filed Jan. 21, 1931. 5 claims. (Cl. 92-29). Excess liquid is removed by filtration in minute dispersion of the order of that obtainable by passing liquid through a porous diaphragm plate.

1,924,573. Fibrous web for artificial leathers or the like. Milton O. Schur, assignor to Brown Company, Berlin, N. H. Filed Jan. 19, 1932. 8 claims. (Cl. 92-3). Waterlaid web of interfelted cellulose fibers.

1,924,601. Composite structure. Harry C. Fisher, assignor to The Richardson Company, Lockland, Ohio. Filed May 25, 1929. 5 claims. (Cl. 154-51). Bituminous fibers covered with a hardened condensation resin.

1,924,612. Paper drying apparatus of the festoon type. William P. McCorkindale, assignor to Esleeck Manufacturing Company, Turner Falls, Mass. Filed Feb. 9, 1931. 6 claims. (Cl. 34-20).

1,924,623. Refinement of cellulose fiber. George A. Richter, assignor to Brown Company, Berlin, N. H. Filed Sept. 6, 1930. 6 claims. (Cl. 92-13). Pulp is digested at about 175 deg. C. in water containing only a low concentration of hydroxyl ions.

1,924,660. Pulp making process. Max Skolnik, assignor to Skolnik Patents Corporation, Chicago, Ill. Filed Nov. 30, 1931. 4 claims. (Cl. 92-14). Alkaline process for straw.

1,924,754. Rotary folder for paper-bag making and similar machines. Sidney George Rowles, Orpington, England, assignor of one-half to Percy Robert Fender, London, England. Filed Nov. 2, 1931. 5 claims. (Cl. 93-27).

1,924,815. Process of making felt paper pulp. Max Skolnik, assignor to Skolnik Patents Corporation, Chicago, Ill. Filed Feb. 29, 1932. 21 claims. (Cl. 92-13). Felt fibers from straw by an alkaline treatment, washing with a soapy solution and neutralizing the fibers with an acid.

1,924,860. Apparatus for bleaching of pulp. Hans John, Clarence C. LeFebvre and Horace Du Bois, assignors to Paper Patents Company, Neenah, Wis. Filed Dec. 22, 1931. 13 claims. (Cl. 8-2).

1,924,873. Machine for making packing material. Albert E. F. Moone, assignor to Orenda Corporation, Chicago, Ill. Filed Nov. 1, 1930. 10 claims. (Cl. 154-31). Means of uniting an embossed sheet to a backing sheet.

1,924,883. Vacuum seal for driers. Andrew N. Russell, assignor to Dominion Engineering Works, Limited, Lachine, Canada. Filed Apr. 24, 1931. 14 claims. (Cl. 34-48).

1,924,969. Device for testing the viscosity of liquids. Marion B. Wheeler, Raleigh, N. C. Filed Jan. 20, 1931. 1 claim. (Cl. 265-11).

1,924,994. Process and apparatus for coating paper. Theodore E. Knapp, Jr., assignor to The Champion Coated Paper Company, Hamilton, Ohio. Filed Nov. 29, 1930. 5 claims. (Cl. 91-27).

September 5, 1933

1,925,206. Method of manufacturing sheet packing material. Richard Roberts, Pasadena, Calif., assignor of one-third to Hans Giese, Santa Barbara, Calif. Filed Sept. 29, 1930. 6 claims. (Cl. 154-2). Asbestos fibers impregnated with latex.

1,925,235. Carbon paper. Harold W. A. Dixon, Hollis, N. Y. Filed Jan. 24, 1931. 3 claims. (Cl. 282-28). Glassine paper base and a coating of hectograph ink.

1,925,282. Roofing elements and method of applying surfacing materials thereto. Thomas Robinson, assignor to Lancaster Asphalt, Inc., New York, N. Y. Filed Oct. 11, 1929. 11 claims. (Cl. 91-70).

1,925,372. Process of deinking printed paper. Elton R. Darling, assignor to Mariner and Hoskins, Inc., Chicago, Ill. Filed Nov. 14, 1931. 13 claims. (Cl. 92-13). An alkaline solution of pH 9 to 12.6 is used.

1,925,448. Process for improving the transparency of glassine paper. Julius E. Kiefer, assignor to Transcello Paper Company, Milwaukee, Wis. Filed July 21, 1930. 1 claim. (Cl. 91-68). Method of impregnating with a transparent liquid having resinous material in solution.

1,925,453. Sound absorbing structure. Jacob Mazer, Philadelphia, Pa. Filed Dec. 22, 1928. 5 claims. (Cl. 154-45). A facing sheet, with an interposed corrugated sheet.

1,925,526. Coloring paper and the like. Frank Dotzel, assignor to I. G. Farbenindustrie Aktiengesellschaft, Frankfort-on-the-Main, Germany. Filed Sept. 24, 1930. 12 claims. (Cl. 8-5). In dyeing with a basic and substantive dye the paper is treated with a synthetic tanning agent.

1,925,584. Production of pulps containing thermoplastic substances. Harry C. Fisher, assignor to The Richardson Company, Lockland, Ohio. Filed June 25, 1932. 17 claims. (Cl. 92-21). A dispersion of thermoplastic binder substance is treated with a quantity of absorbent, finely divided non-fibrous matter so as to cause the binder to be absorbed by said matter.

1,925,722. Method of and apparatus for treating pulp stock. Gumal Knopp, assignor to Centrifugal Engineering and Patents Corporation, Jersey City, N. J. Filed June 4, 1930. 5 claims. (Cl. 92-34). Centrifugal refiner.

1,925,791. Tube forming machine. Eugene Conti, assignor to Alexander Herz, New Rochelle, N. Y. Filed Nov. 8, 1929. 10 claims. (Cl. 93-80).

1,925,833. Consistency regulator. George F. French, assignor to Riegel Paper Corporation,

Riegelsville, N. J. Filed Apr. 13, 1932. 15 claims. (Cl. 92-46).

1,925,866. Synchronized motor drive for supercalenders and winders. Chester W. Drake, assignor to Westinghouse Electric and Manufacturing Company, Pittsburgh, Pa. Filed Nov. 11, 1931. 20 claims. (Cl. 92-73).

1,925,917. Paper press belt. Otto T. Chalon, New York, N. Y. Filed June 7, 1932. 7 claims. (Cl. 92-49). Endless press belt having a plurality of self-opening and closing perforations.

1,925,922. Beater for the paper industry. Edouard Héry, Paris, France. Filed Oct. 1, 1930. 1 claim. (Cl. 92-34).

1,925,949. Paper and textile machinery. John J. Case, assignor to John Waldron Corporation, New Brunswick, N. J. Filed May 14, 1931. 3 claims. (Cl. 92-75).

1,925,972. Primary press section for paper machines. Albert H. Standley and Edward T. Street, assignors to Downingtown Manufacturing Company, Downingtown, Pa. Filed July 18, 1932. 36 claims. (Cl. 92-49).

1,926,002. Manufacture of wood pulp. Frederick C. Hahn and Robert E. Fothergill, assignors to E. I. du Pont de Nemours and Company, Wilmington, Del. Filed May 2, 1931. 6 claims. (Cl. 92-11). Wood is digested with ammonium bisulphite solution of pH 1 to 1.7 and ammonia concentration of 0.5 to 1.0 per cent.

SEPTEMBER 12, 1933

1,926,028. Fabricated material and process for its manufacture. Willis A. Boughton, assignor to Bennett Box Company, Boston, Mass. Filed Sept. 15, 1926. 14 claims. (Cl. 92-21).

1,926,241. Paper bag machine. Howard H. Orr, assignor to The Jaite Company, Jaite, Ohio. Filed May 31, 1930. 9 claims. (Cl. 93-8).

1,926,253. Fireproofing wood, vegetable fibrous materials and textile fabrics. Arthur P. Allen, San Mateo, Calif. Filed Sept. 28, 1931. 11 claims. (Cl. 99-12). Use of a borate salt and a small amount of a saccharide.

1,926,292. Paper-making machine and method. Ralph Henry Kruse, assignor to The Cambridge Instrument Company, Inc., Ossining, N. Y. Filed May 31, 1930. 20 claims. (Cl. 92-38). Method of feeding and drying moisture-laden material by means of heated rolls.

1,926,319. Paper making machine. Frank J. Timmerman, Green Bay, Wis. Filed Dec. 10, 1929. 7 claims. (Cl. 92-51). Combination of a fourdrinier wire and breast roll.

1,926,340. Method of producing slitted-web paper rolls. William H. Kniep, assignor to The Graham Paper Company, St. Louis, Mo. Filed March 21, 1932. 5 claims. (Cl. 164-65).

1,926,363. Process and machine for treating moisture proof sheet material. Samuel Bergstein, Cincinnati, Ohio. Filed Apr. 22, 1930. 9 claims. (Cl. 91-51).

1,926,364. Machine and method for making knockdown boxes. Samuel Bergstein, Cincinnati, Ohio. Filed Feb. 19, 1931. 20 claims. (Cl. 93-49).

1,926,421. Method and apparatus for manufacturing paper bags. Arno Andreas, Munster, Germany. Filed Aug. 14, 1930. 7 claims. (Cl. 93-14).

1,926,425. Method and apparatus for salvaging news print paper. Harry B. Bergstrom, Frederick W. Bonfils, Nicholas De George and Louis Tuckman, Denver, Colo. Filed Sept. 17, 1928. 17 claims. (Cl. 164-65). Method of splicing and rewinding.

1,926,546. Method and apparatus for removal of mechanical impurities from cellulose and other similar fiber pulps. Aleksander Lampen, Imatra, Finland. Filed Apr. 2, 1932. 8 claims. (Cl. 92-34).

1,926,599. Artificial leather manufacture. George A. Richter, assignor to Brown Company, Berlin, N. H. Filed Jan. 18, 1929. 9 claims. (Cl. 154-2). Web of felted fibers united with sheet of rubber and impregnated with rubber.

1,926,614. Fixation of dyes on colored paper. Carl Z. Draves, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del. Filed July 24, 1931. 10 claims. (Cl. 8-5). The dye is fixed by a substance of the group consisting of di- and tri-arylguanidines.

1,926,774. Ejecting and delivery device for winding machines. Robert McC. Johnstone, assignor to Cameron Machine Company, Brooklyn, N. Y. Filed Jan. 28, 1931. 6 claims. (Cl. 242-66).

1,926,822. Paper machine drive. Carroll Standbury and Glendon C. Brown, assignors to Cutler-Hammer, Inc., Milwaukee, Wis. Filed Mar. 12, 1931. 20 claims. (Cl. 172-293).

1,926,982. Fibrous composition. Lester Kirschbraun, assignor to The Flintkote Corporation, Boston, Mass. Filed June 9, 1930. 4 claims. (Cl. 92-21). Method of waterproofing.

SEPTEMBER 19, 1933

1,927,024. Coating machine. John W. Cosgrove, assignor to United Shoe Machinery Corporation, Paterson, N. J. Filed Jan. 25, 1929. 38 claims. (Cl. 91-50).

1,927,047. Fibrous material and method of making the same. Thomas Robinson, assignor to Lancaster Processes, Inc., Long Island City, N. Y. Filed Nov. 18, 1931. 22 claims. (Cl. 92-41).

1,927,359. Fiberboard and process for producing same. Jacob Edge, assignor to Downingtown Manufacturing Company, Downingtown, Pa. Filed Jan. 5, 1931. 4 claims. (Cl. 92-39).

1,927,360. Board machine. Jacob Edge, assignor to Downingtown Manufacturing Company, Downingtown, Pa. Filed Aug. 21, 1931. 26 claims. (Cl. 92-39).

1,927,361. Board making machine. Jacob Edge, Downingtown, Pa. Filed Oct. 1, 1931. 16 claims. (Cl. 92-39).

1,927,378. Apparatus for and method of making fiber board. Edward T. Street, Downingtown, Pa. Filed Oct. 23, 1931. 33 claims. (Cl. 92-29).

1,927,498. Belt for fourdrinier machines. Hamilton Lindsey and Edward J. Buell, assignor to The Lindsay Wire Weaving Company, Cleveland, Ohio. Filed Nov. 28, 1931. 6 claims. (Cl. 245-8).

1,927,541. Process and plant for the manufacture of pure cellulose from vegetable fibers. Cesar Bouvier, Paris, George Fouché, La Fleche, and Edmond Seguin, La Courbe-le-Lude, France. Filed June 22, 1932. 5 claims. (Cl. 92-11). Use of two autoclaves.

1,927,798. Insect repellent paper and process for making the same. David C. Kinnell, assignor to D. C. Kinnell and Co., Incorporated, Montclair, N. J. Filed June 25, 1931. 9 claims. (Cl. 92-3). Cedar and an aromatic oil are used.

SEPTEMBER 26, 1933

1,927,820. Apparatus for making variegated strip shingles. Clarence R. Eckert, assignor to The Patent and Licensing Corporation, Boston, Mass. Filed July 16, 1929. 6 claims. (Cl. 91-12).

1,927,824. Process of producing thick butt shingles with sealed edge. Clarence R. Eckert, assignor to The Barrett Company, New York, N. Y. Filed Oct. 10, 1931. 4 claims. (Cl. 91-68).

1,927,879. Insulation slab. Allen L. Spafford, assignor to Wood Conversion Company, Cloquet, Minn. Filed Nov. 16, 1931. 6 claims. (Cl. 154-44).

1,928,045. Manufacture of creped paper. Edward H. Angier, assignor to Edward H. Angier, Framingham, Mass. Filed Oct. 10, 1932. 6 claims. (Cl. 154-33). Method of producing water-resistant crepe paper by roll and doctor.

1,928,052. Refining engine for use in pulp refining. William Groundwater Fraser, Fulham, London, England. Filed Mar. 5, 1931. 7 claims. (Cl. 92-27).

1,928,099. Sulphur burner. Lowry Gillett. assignor to General Chemical Company, New York, N. Y. Filed June 28, 1929. 13 claims. (Cl. 23-278).

1,928,105. Waterproof material and the manufacture thereof. Ludwig Kern, Webster Groves, Mo. Filed June 18, 1930. 2 claims. (Cl. 91-70).

1,928,107. Method and apparatus for bringing paper stock onto the wire of a paper-making machine. Richard T. Lang, assignor to American Voith Contact Company, Inc., New York, N. Y. Filed Sept. 30, 1932. 7 claims. (Cl. 92-44).

1,928,274. Method of manufacturing roofing. Jules L. Wettlaufer, Belmont, Mass. Filed Mar. 28, 1928. 7 claims. (Cl. 91-68).

1,928,275. Method for surfacing roofing. Jules L. Wettlaufer, Belmont, Mass. Filed Dec. 31, 1930. 8 claims. (Cl. 91-43).

1,928,285. Roofing. Albert C. Fischer, assignor to The Philip Carey Manufacturing Company, Lockland, Ohio. Filed Feb. 10, 1930. 4 claims. (Cl. 108-7).

1,928,286. Fourdrinier paper machine. Rudolph C. Germanson, assignor to Paper Patents Company, Neenah, Wis. Filed Aug. 15, 1930. 10 claims. (Cl. 92-44). A table roll with a mesh-like supporting surface.

1,928,601. Pulper. Carl G. Muench, assignor to The Celotex Company, Chicago, Ill. Filed Aug. 19, 1929. 23 claims. (Cl. 92-20).

Print on Georgia Pine Paper

On Monday, November 20 the following dailies printed their editions on news print made from Georgia pine prepared under the direction of Dr. Charles H. Herty:

Albany Herald; Athens Banner Herald; Atlanta Constitution; Atlanta Georgian; Atlanta Journal; Brunswick News; Macon Telegraph; Savannah Morning News and Waycross Journal-Herald.

The tests are said to have been highly satisfactory in every respect.

The following is a letter to Dr. Herty from John Ball, manager of the Beaver Wood Fibre Company, Ltd., at whose plant at Thorold, Ont., the news print for these trial runs was manufactured:

"It is with a great deal of pleasure that the writer is able to report to you the results which were obtained in making a newsprint run from your Georgia pine, sulphite pulp and ground wood.

"Before making this run all tanks were cleaned out and every possible thing was done to have no other stock in the system but yours.

"The writer is very pleased to learn that there was no pitch at any time and in fact the paper which we ran stuck to our first press roll 75 per cent less than it would on our regular spruce pulp.

"We started on this run at 5:18 P.M., November 1, and we ran from that time until 1:35 A.M., November 2, without having a break on the machine. In other words, it ran 100 per cent perfect as far as the paper machine operation was concerned. As you can quite readily see, it took a fairly good surface, but the writer is of the opinion that with a little more experience with your sulphite and ground wood you will be able to get a still better surface, a much cleaner and better sheet of paper. The formation was excellent as you will note from the samples submitted.

"For your information, this paper was run at a speed of from 745 to 750 feet per minute, and if we had had more pulp we would undoubtedly have run faster. In my opinion we could run at any speed within reason that any of the higher speed 1,200 feet per minute machines would run.

"We find it takes less steam to dry this paper than it does our regular spruce wood pulp. Ordinarily we run on our machine from 8 to 10 pounds back pressure, but we found when running this pulp that our back pressure was down as low as 1½ pounds, which, to the writer, was a revelation.

"You understand, of course, that your paper was made upon the same wire, same felts, and under identically the same conditions as we operate when on our regular news print. There were no changes of any kind made.

"The paper calendered fairly well, ran perfectly on the winder and made perfect rolls. We will, however, forward you more technical details when the laboratory reports are all in.

"By this test you have proven that your young southern pine is in a high sense suitable for the manufacture of news print.

A New Color Comparator*

By J. W. Forrest[1]

Abstract

A brief review is given of the Munsell color system and a description of a device developed by the Bausch and Lomb Company to utilize the Maxwell rotating disc procedure in a way that provides greater ease of manipulation.

To build up a foundation on which the new comparator may be more satisfactorily described it will be well to review briefly the various methods by which color may be specified. First and basic to all others is the method of determining by means of a spectrophotometer the transmission or reflection curve of the color in question. Unfortunately this method while it is that on which all others depend does not give a specification that is quick to obtain or easy for the untrained operator to interpret. It does, however, furnish the basis on which all other methods rest. Means for determining the spectro-photometric curve have long been on the market in various forms. A second group of methods depends for measurement on the combination of the three primary colors to produce a composite color which will match the sample. The matching color is produced by mixing various amounts of the primaries. It is limited by the purity of the primaries obtainable and by the permanence of these primaries. Several forms of this device are also marketed. It serves as an arbitrary specification in terms of three colors.

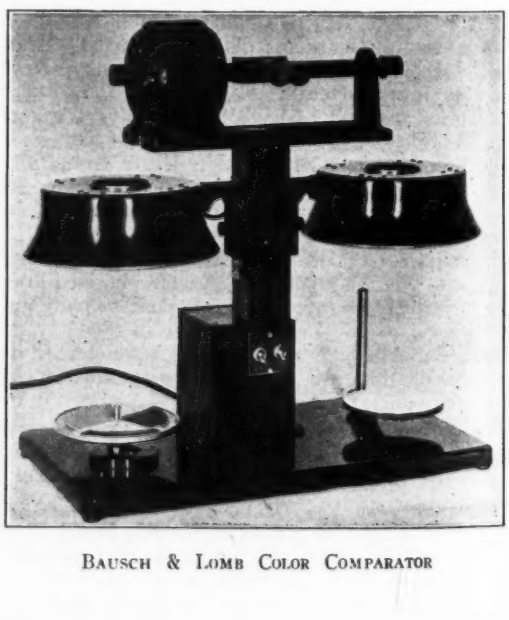
Color may be given three attributes: hue, value and chroma. The first tells us whether the color is red, green or blue. The second tells us whether the color is light or dark. The third whether the color is strong or weak. To illustrate from the spectrophotometric curve, the hue will be represented by the position of the peak of the curve, the value will be represented by its height and the chroma by the sharpness of its rise. It is on these three values that the system to be described is built up.

The Munsell System

Several years ago, an artist in Boston, A. E. O. Munsell, conscious of the then meager means of specifying color, devised a system which still bears his name. The entire system of color is conceived in the form of a cylinder in which the central axis is the gray series, that is, a series grading from black to white and being characterized by an absence of what we ordinarily mean when we mention color. The periphery of the cylinder section represents the various colors as we know them, beginning with red, and running through a range of five primaries, red, yellow, green, blue and purple, and five secondaries, red-yellow, yellow-green, green-blue, blue-purple, and closing the circle with purple-red. The chroma of the color is designated by its radial distance from the gray axis. The vertical surface of any of the concentric cylinders about the gray axis represents the brightness of the color. It will be seen at once that we have in this hypothetical color cylinder a means for expressing any unknown in terms of hue, brightness and chroma. The hue will be expressed in terms of one of the ten peripheral divisions.[2] The value will be represented by one of the ten vertical axial divisions, and the chroma by the radial position. The number of the peripheral divisions and the number of the vertical axis divisions may be arbitrarily chosen. The number of radial divisions, (chroma) will depend on the availability of pigments to produce strong colors. The pigments available in the red-yellow range are much stronger than some others so we may have more radial steps in these colors than in others. Also, some colors will attain a higher chroma, at a higher value, than will others. These facts result in a figure in which the radii of the cylindrical sections vary in length as we pass from hue to hue or from value to value. The Munsell system sets this color cylinder up with nine grays in the vertical axis and twenty steps in the hue scale.

Having established this basic idea for the specifications of color, Mr. Munsell and his successors have produced a series of colored discs, in which the various available pigments have been laid down on paper to produce the entire group of colors. Thus we have nine grays or neutrals, numbered from 1 to 9, and for each hue, there is a radial series at each value, going out from the neutral axis to the strongest available chroma. If one had the entire series of colors available, a match would be obtained by direct comparison with the standard. To avoid the maintenance of the complete series, resort is had to the Maxwell system of spinning the discs to produce intermediate shades and tints. Thus, a brilliant yellow may be combined with a neutral of the same value, to move horizontally along the chroma axis. It may also be combined with a white to shift the chroma inward on the axis and upward in the value scale, or with black to move inward and downward. The former combinations are known as tints and the latter as shades.

Until quite recently, the mechanism by which the combination of the existing colors to produce a desired match was effected, has been laborious to operate. The discs were attached directly to the motor shaft and spun. If the match were not good, the motor had to be stopped and the relative amounts of the discs altered time after time



Bausch & Lomb Color Comparator

Received September 28, 1933.

* Presented at the fall meeting of the Technical Association of the Pulp and Paper Industry, Appleton, Wis., September 26-28, 1933.

[1] Bausch & Lomb Optical Company, Rochester, N. Y.

[2] To the system as now offered commercially by the Munsell Color Company, there have been added ten additional intermediate hues, making twenty in all.

until a match was secured. In other words it was a cut and try method.

The Bausch and Lomb Unit

To make available this excellent series of color discs we have designed a new unit in which the discs do not rotate. The same end is effectively reached by introducing into the optical system a rotating wedge which scans a ring section upon the stationary discs and effectively mixes the colors. A system similar to that of any photometer brings the light from the sample and the discs to a common eyepiece. Under these conditions the discs may be adjusted immediately to give the desired hue and value match and a specification may be immediately written from the percentage values as shown on the scale at the edge of the discs. To transform the percentage value as read into terms of hue, chroma and value, three empirical formulae are used. From each formula is obtained a value for a specific attribute.

$$\text{Hue} = x - \frac{AxPx}{AxPx + AzPz}(x - z)$$

$$\text{Value} = \frac{A_1B_1^2 + A_2B_2^2 + A_3B_3^2 + A_4B_4^2}{100}$$

$$\text{Chroma} = \frac{A_1C_1 + A_2C_2}{100}$$

where A is area, expressed in angular degrees, x and z are the positions in the Munsell hue circle, B and C are the Munsell designations for value and chroma respectively. The "P" terms in the hue formula express what is known as the "power" of the color and are obtained by multiplying the numbers expressing the value and chroma in the Munsell system.

The instrument which we have designed to utilize the Munsell disc system may be divided for purposes of description into three parts: 1. The illumination system, 2. The scanning system, and 3. The observing system.

For illumination we have used one diffusing system over the unknown and another over the discs. Each system carries four six-volt auto headlight bulbs, symmetrically positioned over the table. These bulbs are frosted on the tip and are under a conical diffusing reflector, thus providing at the sample level, a very even illumination. The bulbs are operated by an integrally mounted special transformer, of sufficient capacity to run the eight lamps at full efficiency. The primary current is controlled by a toggle switch on the instrument upright. The two systems are separately adjustable in height to permit balancing of illumination. As a scanning device for the discs we have used a rotating wedge in the optical system. This wedge is mounted within the shaft of a special hollow shaft a.c. induction motor, thus insuring the least possible noise of operation and the essential speed and steadiness. The motor was designed and built particularly for this instrument. The optical system consists of a pair of right angled prisms by which the beams are brought to a biprism in the eyepiece tube. With the necessary viewing eyepiece, this constitutes a symmetrical photometric system of the simplest type, giving the standard circular bipartite field.

The sample table is brought down to a level where easy manipulation of the discs is assured. The units are combined into a compact instrument, stable and free of excessive vibration. The instrument requires the use of alternating current, since neither motor nor transformer can be operated by direct current.

Pulp and Paper Industry Literature Review

Abstracts of Articles and Patents Compiled by the Abstracts and Bibliography Committee of the Technical Association of the Pulp and Paper Industry, A. Papineau-Couture, John F. Ohlson, C. E. Peterson and Clarence J. West, Chairman

Copies of United States Patents can be obtained from the United States Patent Office, Washington, D. C., for 10 cents each. Send currency, not stamps.

Paper Specialties

Machine for Coating Paper. Thomas H. L. Dixon. U. S. pat. 1,892,484 (Dec. 27, 1932).—Provision is made for mounting two supply rolls of coating stock close to each other and in such relative positions that, when one roll becomes exhausted the end of the web will automatically be positioned near the free end of the replenishing web and can be rapidly attached thereto without stopping the machine.—A.P.-C.

Wiper Mechanism for Coating Machines and Processes. Donald B. Bradner assignor to The Champion Coated Paper Co. U. S. pat. 1,901,080 (March 14, 1933).—The coating is applied to the paper as it is passing around a roll, and it is spread and regulated by means of a co-acting roll rotating in opposite direction. Two spaced doctor blades and an intervening water spray are provided to clean the surface of the second roll.—A.P.-C.

Coated Paper Transfer Material. Bert S. Taylor and Webster N. Jones assignors to The B. F. Goodrich Co. U. S. pat. 1,885,388 (Nov. 1, 1932).—A thin paper base is coated on one side with a composition largely of an oleoresinous varnish containing substantial proportions of a drying oil, a finely divided pigment such as aluminum powder and a fatty acid such as stearic acid.—A.P.-C.

Stencil Sheet. Shinjiro Horii. U. S. pat. 1,885,261 (Nov. 1, 1932).—A suitable thin tissue paper is coated with a mixture of mineral waxes and an esterification product of bleached montan wax and polyhydric alcohols.—A.P.-C

Impregnating Process. Joseph Zavertnik, Jr., assignor to The Barrett Co. U. S. pat. 1,884,486 (Oct. 25, 1932).—Roofing stock is supported on a rotating perforated roll the inside of which can be subjected to a vacuum, and saturant is sprayed on to the outer surface of the stock.—A.P.-C.

Method of Making Roofing. Jules L. Wettlaufer assignor to The Patent and Licensing Corp. U. S. pat. 1,886,456 (Nov. 8, 1932).—The weather-exposed portion of impregnated roofing felt is covered with a layer of plastic material, *e.g.*, bituminous material having a melting-point of 180 deg. to 220 deg. F, combined with 30 to 50 per cent fibrous and other fillers, which not only covers the lower exposed face of the base, but is also made to extend around the butt and side edges. Various devices for forming and applying the plastic layer are described in the specifications.—A.P.-C.

Method for Treating Shingles. Walter S. Johnston assignor to The Patent and Licensing Corp. U. S. pat. 1,892,672 (Jan. 31, 1933).—Imperfectly surfaced prepared roofing shingles are fed through a heating zone to

soften the coating and are subjected to pressure immediately as they leave the heating zone. The operations are repeated until the surface has been smoothed to the desired extent.—A.P.-C.

Sheets, Boards, Etc., of Fibrous Material. Francis L. Carson assignor to Pacific Lumber Co. U. S. pat. 1,884,563 (Oct. 25, 1932).—Shredded raw vegetable fibers such as Sequoia bark are introduced into a solution containing soap and starch and the product is formed into a board, sheet, or other desired shape by sheeting and pressing.—A.P.C.

"Rot-Proof" Fiber Board. Daniel M. Sutherland, Jr. U. S. pat. 1,884,367 (Oct. 25, 1932).—A "rot-proof and termite-proof" fiber board comprises interplaced fibers having their interstices charged with a waterproofing material such as rosin size together with a toxic agent such as zinc meta-arsenate.—A.P.-C.

Method of and Machine for Vertically Coating Continuous Strips of Roofing Material. Frederick C. Overbury assignor to The Patent and Licensing Corp. U. S. pat. 1,890,018 (Dec. 6, 1932).—The invention provides means for automatically handling a continuous sheet of roofing felt and performing successive operations which converts it into thick-butt units the weather-exposed portions of which are completely sealed and protected by means of an asphalt coating. One of the features of the invention consists in conveying the strip in a substantially vertical position during or immediately after spraying with molten blown asphalt, so that the latter drains downward and forms a coating that is thickest at the butt end of the shingle units.—A.P.-C.

Roofing Manufacture. Eugene T. Doyon assignor to Certain-teed Products Corp. U. S. pat. 1,900,598 (March 7, 1933).—Shingle strips are obtained from a vari-colored web of roofing by cutting the latter on the bias, instead of at right angles to its length.—A.P.-C.

Insulating Body. George H. Ellis assignor to The Insulite Co. U. S. pat. 1,900,698 (March 7, 1933).—Thick heat-insulating bodies are obtained by fiberizing wood to produce a fiber too coarse and too long for the coarsest grade of paper, hydrolizing the pulp, forming it into a thick felted sheet, drying, and then simultaneously pressing and heating.—A.P.-C.

Roofing and Method of Making Same. Lester Kirschbraun assignor to the Patent and Licensing Corp. U. S. pat. 1,900,940 (March 14, 1933).—Tapered roofing elements having the main body portion composed of hardened plastic material are formed by feeding a sheet of roofing felt over a smooth roll, simultaneously discharging homogeneous plastic material composed of bitumen and hardening fillers on the side of the sheet which is not in contact with the roll, and shaping into tapered elements by the action of a roll having suitably shaped cavities and co-acting with the first roll.—A.P.-C.

Waterproofing Insulating Body. George H. Ellis assignor to The Insulite Co. U. S. pat. 1,900,699 (March 7, 1933).—Hard wood-like bodies are formed by mixing raw wood pulp and pulverized asphalt, forming the mixture into a felted sheet, drying and pressing for 15 to 30 minutes at a pressure of 150 to 200 lbs. per sq. in. and a temperature of about 350 deg. F.—A.P.-C.

Method of Making Roofing Stock. Frederick C. Overbury assignor to The Patent and Licensing Corp. U. S. pat. 1,897,139 (Feb. 14, 1933).—A number of spaced parallel strips of felt are applied lengthwise of a sheet of roofing felt of indefinite length and each strip is secured by two sets of fasteners entering both the sheet and the strip at points adjacent to the edges of the strip.—A.P.-C.

Roofing. Edward C. Otis assignor to Certain-teed Products Corp. U. S. pat. 1,900,597 (March 7, 1933).—In surfacing roofing with differently colored materials which are applied as parallel longitudinal strips, the surfacing materials are not delivered directly on to the sheet of roofing, but on to an intermediate device which is given a sidewise movement, so as to produce intermingling and overlapping of the differently colored bands along their edges.—A.P.-C.

Reenforced Paper. George E. Gibbs assignor to American Reenforced Paper Co. U. S. pat. 1,894,219 (Jan. 10, 1933).—Two sheets of paper and an intervening layer of reenforcing material are secured together with waterproof adhesive. The combined sheet is further strengthened by securing ribbon-like strips of reenforcing materials at spaced intervals.—A.P.-C.

Machine for Treating Paper Board. Allen Abrams assignor to Marathon Paper Mills Co. U. S. pat. 1,885,167 (Nov. 1, 1932).—The invention provides a machine suitable for impregnating fiber or paper board with molten sulphur, so as to obtain a dense waterproof sheet, having a hard finish.—A.P.-C.

Creping Paper. William W. Rowe assignor to The Paper Service Co. U. S. pat. 1,893,717 (Jan. 10, 1933).—A web of paper is coated with a thermoplastic adhesive substance, moistened, brought into contact with a roll to which it adheres, and creped by removing it from the roll by means of a creping blade.—A.P.-C.

Paper from Leather. Egon Elöd. Fr. pat. 735,612 (April 20, 1932).—Chippings from the working of chrome-tanned leather are subdivided by crushing, as in a rod mill, and incorporated with chemical pulp. The mixture is treated in the usual manner for conversion into paper.—A.P.-C.

Manufacture of Fibrous Articles. Albert L. Clapp. U. S. pat. 1,900,427 (March 7, 1933).—An aqueous pulp suspension containing sufficient non-hydratable material to form a non-warping composition is sheeted on a paper machine; the web is removed while wet from the machine, formed into the desired shape, impregnated with sodium silicate solution, and dried.—A.P.-C.

Sheets or Cylinders or Other Thin-Walled Articles from Fibrous Pulp. Henry W. H. Warren, Charles G. Garton and Albert E. Smith assignors to General Electric Co. U. S. pat. 1,885,066 (Oct. 25, 1932).—The water in a wet pulp sheet is replaced by alcohol and the alcohol is then in turn replaced by a synthetic resin which is convertible to the cured state by heat and pressure, and the impregnated mass is molded under heat and pressure.—A.P.-C.

Manufacture of Pulp Rovings. John C. Sherman assignor to Brown Co. U. S. pat. 1,887,959 (Nov. 15, 1932).—A series of continuous ribbons are deposited from an aqueous pulp suspension on an endless traveling wire. The damp ribbons are progressively furled into rovings which are led into spinning pots under conditions which build up compact annular masses from which the rovings may be progressively withdrawn.—A.P.-C.

Opaque Paper. Gosta P. Genberg assignor to Fraser Companies, Ltd. Can. pat. 327,642 (Nov. 15, 1932).—Opaque paper is produced by adding titanium (as oxide or other compound), sodium silicate and alum to a pulp furnish comprising ordinary bleached sulphite pulp mixed with groundwood and with a different type of sulphite pulp characterized by bulkiness and by the presence of relatively small fiber particles.—A. P.-C.

Waterproof Paper. Hendrik J. Prins. Fr. pat. 735,921 (April 25, 1932).—Paper is treated with latex or an

emulsion of rubber, gutta-percha, balata, etc., and afterward with one or more waxy substances in the molten state or in solution, emulsion or suspension. The paper is then heated at or above the melting point of the wax.—A.P.-C.

Waterproof and Fire-Resistant Paper. Thomas Jenkins assignor to Norristown Magnesia and Asbestos Co. U. S. pat. 1,885,113 (Nov. 1, 1932.)—A pink tinted paper suitable for covering heat insulation is formed of 93 parts asbestos fibers, 3 parts wood cellulose, 2 parts starch, 2 parts ferric oxide, 0.5 part sodium silicate and 0.25 part alum.—A.P.-C.

Production of Impregnated Paper. Harry Hill assignor to Callender's Cable and Construction Co., Ltd. U. S. pat. 1,899,688 (Feb. 28, 1933).—A strip of paper is embossed at a number of comparatively small areas so as to leave the greater part of the material lying in its original plane. The strip is rolled so that the raised portions keep the layers of the roll apart, and the roll is impregnated.—A.P.-C.

Waterproofed Pulp Product. George J. Manson assignor to Manson Chemical Co. U. S. pat. 1,884,038 (Oct. 25, 1932).—Products such as paper or fiber board are made from a pulp carrying a dispersion of encysted water-repellent substance such as montan wax encysted by precipitated magnesium carbonate.—A.P.-C.

Machinery

Digester Lining Developments. A. F. Richter. Paper Trade J. 96, No. 6: 35 (Feb. 9, 1933).—A review of the developments and trends in the design and construction of sulphite digester linings.—A.P.-C.

Cases of Lead Poisoning Observed in the Chemical Pulp Industry. Mansfeld. Arbeitschutz 1932, No. 7: 142-143; Chimie et Industrie 28: 1332 (Dec., 1932).—Lead poisoning can occur in the case of workmen employed in lining sulphite digesters on account of the litharge-glycerine cement used. Contamination may occur either from the litharge dust or through carelessness in handling the cement before setting. Attempts have been made to overcome this hazard by using special lead-free cements, a number of which are on the market.—A. P.-C.

Installation of Pulsators on Bird Pulp Screens. A. E. Parrett. Pulp Paper Can. 34: 32 (Jan., 1933).—A brief description of the author's experience with the operation of pulsators installed on existing Bird pulp screens, which showed that groundwood could be screened more economically at consistencies of 0.6 to 0.7 per cent than at 0.35 to 0.45 per cent.—A. P.-C.

Pulp Screen. Marcel Thiry. Fr. pat. 737,811 (May 30, 1932).—A rotary pulp screen is divided into two compartments. In the first (larger) compartment, the pulp is screened in the usual way, and the wash water and tailings are delivered into the second compartment to be rescreened so as to recover the greater portion of good fibers adhering to the rejected stock.—A. P.-C.

Process and Arrangement for the Treatment of Pulp, that is, Chipped Wood, by Spraying with a Decomposing Liquid. E. Morterud, Torderoed, Norway, Finn. pat. 14,504 (Nov. 20, 1929). The spraying is done in an enclosed container which can be kept under pressure.—J.F.O.

Stiffness Constants As an Aid to Matching Press Rolls. Harold E. Wright . Paper Trade J. 96, No. 5: 42-44 (Feb. 2, 1933).—The rational application of the formula $d = 5wf^3/384EI$ to the crowning of press rolls results in matching these rolls so that when the crown on one is used up, the crown on the other is used up. All variables involved follow definite laws and can be determined for each pressing set-up. Since E and I cannot be readily calculated for most press rolls, the method outlined is for the experimental determination of the product EI, which is called the "stiffness constant."—A. P.-C.

World's Largest Board Mill Just Installed. Anon. Paper Trade J. 96, No. 5: 47-49 (Feb. 2, 1933).—A description of the 185-inch Beloit board machine, designed to run up to 500 ft. per min., installed at the Thames Board Mills, Ltd., London, England.—A. P.-C.

Recent Improvements in Paper Making Machines and Equipment. A. N. Russell. Pulp Paper Can. 34:82-85, 160 (1933).—A review of improvements in the fourdrinier machine "from slice to reel" in the course of the past 30 years.—A. P.-C.

Screen. E. et M. Lamort Fils. Belg. pat. 389,016 (July 30, 1932).—The screening surface consists of series of plates mounted in star-shape about a horizontal axis. The screen is rotated in the stock, and is subjected to a shake of high frequency.—A. P.-C.

Synchronous Motor Driven Shake for Paper Machines. Lloyd Hornbostel, assignor to Beloit Iron Works. U. S. pat. 1,870,252 (Aug. 9, 1932).—The shake is operated by one or more pairs of synchronous motors, each pair of which operates a lever connected to the table rails. One motor of each pair may be adjusted while the machine is in operation so as to control the amplitude of vibration of the shake mechanism.—A. P.-C.

Device for Regulating the Consistency of Stock in the Beater. Sidney E. Meyers, assignor of one-half to Ericsson H. Merritt. U. S. pat. 1,884,075 (Oct. 25, 1932). —The slope of the stock circulating in the beater is a function of the consistency. Elements responsive to changes in the hydraulic level are placed at two points in the beater trough, preferably on opposite sides of the midfeather, and are connected differentially to control the addition of water to the beater so as to maintain the consistency at a predetermined value.—A.P.-C.

Slitting Means. James A. Cameron, assignor to Cameron Machine Co. U. S. pat. 1,867,059 (July 12, 1932).—The main object is to provide means whereby a backing-roll having circumferential grooves can be arranged to slit paper into any desired widths notwithstanding the presence of the circumferential grooves. This is effected by providing the backing-roll with a sheet-metal ring opposite and coacting with each of the slitters, the position of each ring being adjustable lengthwise of the roll. The means used to secure the rings in position on the roll fit into the grooves on the surface of the roll so as not to interfere with the paper.—A.P.-C.

Take-Up for Fourdrinier Machines. Joseph A. White, assignor to The Moore and White Co. U. S. pat. 1,885,163 (Nov. 1, 1932).—Means are provided for taking up considerable slack in the wire, so that the wire may be made with sufficient slack to avoid the necessity of displacing the breast or couch roll from their normal operating position on the fourdrinier when it is necessary to change wires. The mechanism consists of two heavy rolls bearing on the return run of the wire and mounted so that they balance each other and comparatively little power is required to shift them when it is necessary to take up or slacken the wire.—A.P.-C.

Cylinder Paper Machine. Cliff R. Crawford, assignor to The Black-Clawson Co. U. S. pat. 1,884,583 (Oct. 25, 1932).—The stock vat is placed at the side of the cylinder, so that the water withdrawn from the vat through the screen-covered surface of the cylinder can flow and drain through the bottom of the cylinder. A press roll contacts with the cylinder at a point near where the latter emerges from the stock. The flow of the stock in the vat is controlled by means of a number of adjustable baffles.—A. P.-C.

Raw Materials

White Paper from Young Southern Pines. C. H. Herty. Paper Trade J. 96, No. 13: 23-27 (March 30, 1933).—An outline of the work carried out to date at the Division of Pulp and Paper Research of the Georgia Department of Forestry and Geological Development.—A. P.-C.

The Cameron-Dockery Proposal for Utilization of the Whole Cotton Plant as a Source of Cellulose for Paper Making. Harold R. Murdock. Paper Trade J. 96, No. 14: 41-42 (April 6, 1933).—Experiments made to determine the quality of the cellulose obtained by common pulping processes from the entire cotton plant grown and harvested so as to increase the yield per acre gave results offering but little encouragement relative to the cellulose in the stalks.—A. P.-C.

Permanent Supply of Pulping Woods in the Pacific Northwest. J. B. Woods. Paper Trade J. 96, No. 21: 41-42(May 25, 1933).—A brief discussion of the sustained annual yield which may be obtained from the states of Washington and Oregon.—A. P.-C.

Recovery of Cellulose from the Oil Flax Straw. P. Waentig. Papier-Fabr. 31, No. 2: 13-15 (Jan. 8, 1933).—The not completely satisfactory properties of the paper stock produced from the oil flax straw by the chlorine process is explained by the great sensitivity toward mechanical action because of considerable lignification of the bast fibers of this kind of flax making the fibers brittle. It is therefore recommended that the preliminary mechanical work before the decomposition be avoided and to make the separation of the bast fiber from the other parts after the cooking.—J. F. O.

Modern Method for the Re-Use of Waste Papers. Anton D. J. Kuhn and G. Steisel. Mon. Papeterie Belge 13:107-110 (Feb., 1933).—A brief description of various systems which are being used successfully in Germany and in the United States.

De-Inking Waste Papers. Fernand F. Schwartz. Fr. pat. 739,533.—The waste paper is soaked in about 7 times its weight of water containing about 0.5 per cent of saponified fat, sulphonated or unsulphonated, together with about 0.5 per cent of solvents which, in presence of the soap, remain completely dispersed in water; after about 20 min. more water is added together with sufficient solvent to supersaturate the emulsifying power of the soap and cause its precipitation together with the ink pigment. —A. P.-C.

Method and Apparatus for Treating Waste Papers. Anton Kuhn and Karl Kuhn. Fr. pat. 734,887.—The essential object of the invention is to produce from waste paper a pulp that is free from pieces of undisintegrated paper and from disintegrated particles of foreign matter. The sorted or unsorted waste papers are introduced into a rotating perforated drum where they are moistened; rotation of the drum causes disintegration of the papers until they can pass out through the perforations, while the foreign matter is retained inside the drum. The partially disintegrated paper is passed through a special disintegrator consisting of a casing in which are mounted two parallel longitudinal rotating shafts provided with strong blades which intermesh with one another and with similar stationary blades on the wall of the casing.

Concerning the Question of the Using of Old Papers. F. Hoyer. Papier-Fabr. 31, No. 18: 272-74 (April 30, 1933).—The general economic situation in the principal countries using old waste papers, methods for grading, and a short resume of the various methods for working up the old paper.—J. F. O.

Suitability of the Chinese Pines and Chamaecyparis from Fukien Province, China, for Pulp and Paper Manufacture. T. H. Wang. Lingnan Sci. J. 12, no. 1:37-42 (1933); C. A. 27:3072.—Analyses of Chinese pine and cedar yielded 1.00 and 1.64 per cent ether-soluble, 2.4 and 2.1 per cent cold-water-soluble, 2.9 and 3.0 per cent hot-water-soluble and 12.9 and 15.2 per cent sodium hydroxide-soluble material, 30 and 32.9 per cent lignin, 50.1 and 49.9 per cent cellulose and 0.6 and 0.7 per cent ash, respectively. Both woods are suitable for pulping by the soda process.—C. J. W.

Application of Poplar Wood in the Production of Cellulose. F. Komarov. Bum. Prom. 11, no. 12:44-47 (1932); C. A. 27:2032.—Chemical pulping of *Populus nigra* produced a high grade of cellulose.—C. J. W.

Cellulose from the Leaves of Phoenix Dactilifera. F. Sorges. Lavori ist. botan. Palermo 3:49-55 (1932); C. A. 27:1745.—The leaves treated by the sodium hydroxide and the chlorine methods yield, respectively, 30.9 and 37:5 per cent cellulose (on dry matter). The alternative treatment with alkali and acids gives 85-88 per cent cellulose. The cellulose contains, on an average, 2.24 per cent water and 1.23 per cent ash and has copper number 1.8, loss on hydrolysis by heating 5 minutes 4.07 per cent and by heating 1 hour 17.2 per cent, increase in weight by mercerization 25.4 per cent, decrease in weight by acid purification 5.4 per cent. It contains 12 per cent hemicellulose but no pentosans.—C. J. W.

Old and New Methods in Pulp Manufacture. Emil Haataja. Finnish Paper and Trade J. 1933: 16-20; C. A. 27:2296.—One cubic meter of pulp has a dry weight varying from 430 to 550 kg. As the percentage of branch wood increases the dry weight decreases to 58 per cent of this value for poor rapid-growing trees, 77 per cent for hard, slow-growing trees and 80 per cent "ideal wood," which is straight, round pulpwood with the heart at the center and with growth rings 1-2 mm. apart and uniform from the heart to the bark. The newer methods of pulping wood are discussed.—C. J. W.

Cellulose and Lignin

Alpha-Cellulose from Different Wood Sources. Ross Aiken Gortner and John J. McNair. Ind. Eng. Chem. 25: 505-510 (May, 1933).—Bleached soda and sulphite pulps obtained from eight different woods were subjected to a series of successive alpha-cellulose determinations. Each subsequent alpha-cellulose treatment indicated a lowered alpha-cellulose content. When plotted on coordinate paper, the percentages of alpha-cellulose in the pulp and pulp residues from successive treatments fell on approximately straight lines, the slope of which was characteristic of each pulp. The tangent of the angle of degradation is proposed as a criterion of the ease of peptization of the cellulose micelles in the pulp.—A. P.-C.

The Size of the Cellulose Molecule and a Glance at its Technical Significance. W. Karo. Nitrocellulose 3: 184-186, 202-204 (1932).—A review.—A. P.-C.

Retention of Glycerol and Glycols by Cellophane and Cotton Cellulose. Richard S. Shutt and Edward Mack, Jr. Ind. Eng. Chem. 25: 687, 692 (June, 1933).—From a study of the manner in which glycerol and several glycols are retained when imbibed by cellophane and natural cellulose, it is concluded that the micelles of cotton cellulose seem to be about three times as long as those of the regenerated cellulose in cellophane.—A. P.-C.

Modification of Natural Cotton Cellulose by Swelling and by Degradation. S. M. Neale. Trans. Faraday Soc. 29: 228-238 (1933).—The purpose of this review

is to show that cotton purified by a dilute alkali boil is a material of more or less definite properties, and to indicate the essential lines along which this material can be modified. A compilation of constants is included. —A. P.-C.

Hygroscopic Moisture of Cellulose XI. Consideration of the Mechanism of Adsorption of Water Vapor by Cellulose. Sutezo Oguri. J. Soc. Chem. Ind. (Japan) 36: 67B-70B (Feb., 1933).—A discussion of the author's previous work on the subject, in conjunction with other investigators' results from which it is concluded that (1) the hygroscopic phenomenon of cotton cellulose is nothing but adsorption and (2) from the thermal standpoint there is little or no difference between adsorption and condensation of water vapor as far as cotton cellulose is concerned. A discussion of the mechanism of the adsorption of water vapor by cotton cellulose showed the problem to be more complex and difficult to solve than would have been expected.—A. P.-C.

Cellulose and Its Raw Materials. T. Nakashima and M. Negishi. Cellulose Ind. (Tokyo) 8: 255-259 (1932). —Examination of 5 samples of rayon cellulose and 3 of paper cellulose indicated that there is no substantial difference between the two and that the ordinary paper cellulose may be used for manufacturing technical rayon.—A. P.-C.

X-Ray Examination of Papers and Pulps. Anon. World's Paper Trade Rev. 98: 1393-1394 (Oct. 28, 1933). —X-ray examination of experimental cotton and pure sulphate wood pulp papers and of sulphite wood pulp indicated that the cellulose crystals in both the fibers and paper examined were in the normal state and that the hydration due to beating had had no marked effect on the cellulose lattice.—A. P.-C.

The Technical Significance of the Cellulose Attendant (Hemicellulose). Roland Runkel, Mainz Mombach. Papier-Fabr. 31, No. 7: 75-77; No. 8: 86-88; No. 9: 97-100 (Feb., 12-26, 1933).—The carbohydrates which accompanies the cellulose are divided into hexosanes, pentosanes, hexosane-pentosane, and uron acids. In spruce there is 24.3 per cent hemicelluloses, in grain straw 27.6 and in red beech 32.5 per cent. The author discusses, the distillation of wood in reference to hemicelluloses, hemicelluloses and their importance in the saccharification of wood and in the preparation of fermenting solutions, hemicelluloses and the artificial silk industry, also in connection with textiles, and hemicelluloses in the pulp and paper industry. A bibliography of 65 references accompanies the article.—J. F. O.

The Chain Length of Cellulose of Native Composition and the Chain Length of Acetyl Xylans of Deciduous Woods. Erich Schmidt. Papier-Fabr. 30, No. 50: 719-21 (Dec. 11, 1932).—Description of the experiments and results obtained.—J. F. O.

The Structure of Cellulose Fibers. D. Kruger. Zellstoff Papier 13, No. 1: 9-12 (Jan. 1933).—In support of the microscopical investigation of the fine structure of the cellulose fiber, the following methods are used; (1) the observation of the swelling, (2) investigation with the aid of the Peterfischen micromanipulator, (3) the polarisation microscopic investigation of "lignin cuts", (4) the isolation of the cell wall units according to Hess and Schultze, (5) the treatment with oxydation means, (6) the destruction of the fibres by carbonization. Each of the above are elaborated on, besides discussion of other methods for the study of the cellulose fibers.—J. F. O.

Cellulose, Alpha Cellulose, Oxycellulose, Hydro and Hydratcellulose. Eberhardt Munds. Wochbl. Papierfabr. 64, No. 7: 120 (Feb. 18, 1933).—Definitions and short explanations of the chemical words and terms found in the pulp and paper industry, as an aid to its understanding by non-technical men.—J. F. O.

The Viscosity of Cellulose Solutions. Zellstoff Papier 13, No. 2: 62 (Feb., 1933).—The viscosity of cellulose solutions is lower, the more it has been degraded by oxydation and hydrolysis. Methods for determining the viscosity are discussed. The results of the viscosity tests on many different kinds of cellulose are tabulated.—J. F. O.

Effect of Alkali Treatment on the Yield of Lignin. Elwin E. Harris. Ind. Eng. Chem. (Analyt. Edit.) 5: 105-106 (March 15, 1933).—Previous observations on the decrease in yield of lignin from wood as a result of extraction with dilute alkali was confirmed using a more accurate method of lignin determination, showing that the material removed from wood by alkali treatment is really lignin and not insoluble residues of extractives.—A. P.-C.

Chemical Formula for Lignin. Peter Klason. Svensk Pappers-Tidn. 35: 717-718 (1932); C. A. 27: 1747.—Klason takes exception to Hägglund's use of the Schorger method of distilling acetic acid in vacuum and the conclusion he draws therefrom regarding the constitution of lignin.—C. J. W.

Acetic Acid from Spruce Wood. Erik Hägglund. Svensk Pappers-Tidn. 35:749-750 (1932); 36:48 (1933); C. A. 27:1747.—Hägglund produces additional data to show that his acetic determinations by the Schorger method were correct and that Klason's exceptions are not justified.—C. J. W.

The Composition of Spruce Wood. F. W. Klingstedt. Svensk Pappers-Tidn. 35:730-735 (1932); C. A. 27:1747.—Klingstedt reviews the work of Hägglund and of Klason and points out that Klason's contention that the acetyl groups in spruce wood are joined to the lignin has prevented him from interpreting Hägglund's results correctly. Klingstedt suggests further investigation to determine the actual position of the methoxyl and acetyl groups in spruce wood.—C. J. W.

The Sulphite Cooking Process. Eric Hägglund. Svensk Kem. Hidn. 44: 163-169 (1932); C. A. 27:1749.—Solid lignosulphonic acid is considered analogous to permutite in reversible exchange of hydrogen and alkali ions. This property is demonstrated by adding the compound to sucrose solution and noting the change in rotation.—C. J. W.

Chemistry of the Sulphite Cooking Process. XXVI. Investigations of lignosulphonic acid. Erik Hägglund and Richard Hedlund. Svensk Pappers-Tidn. 35:612-617 (1932); C. A. 27:1749.—During treatment with hydrochloric acid a large part of the lignosulphonic acid seems at first to go into solution; thereafter it gradually polymerizes and precipitates, the amount of precipitation depending on the degree of sulphonation of the lignin.—C. J. W.

Lignin and Cellulose. XXI. Lignin. Karl Freudenberg and Ferdinand Sohns. Ber. 66B:262-269 (1933); C. A. 27:2574.—Report of a number of new observations on pine-wood lignin obtained by altertane treatment of the wood with dilute acid and copper oxide-ammonia. The reactions discussed are: oxidation, reduction, condensation of carbinols with benzene derivatives, ligninsulphonic acids, formaldehyde-cleaving group, diazomethane, adsorptive power and optical activity.—C. J. W.

Sulphonation of Pine-Wood Lignin. II. Erik Hägglund and Gösta E. Carlsson. Biochem. Z. 257:467-477 (1933); C. A. 27:2031.—On methylating the solid soluble lignosulphonic acid there is as much methoxyl found as when lignin is methylated directly. This result is interpreted to mean that in the sulphonation of lignin with bisulphite for each molecule with 2 CH_2O and 2 OH groups, corresponding to amolecular weight of about 300, an extra OH group appears which can be methylated. From this it is further inferred that the sulfonation must rupture a —C_6C— ring in the lignin molecule. Another assumption that the sulphurous acid might react with a ketomethylene group is discounted.—C. J. W.

Lignin

The Possibility of Indicating the Puantitative Chemical Characteristics of Plants as a Basis for Their System. Peter Klason. Svensk Pappers-Tidn. 36, no. 6:226-228 (Mar. 31, 1933).—Research has shown that a large number of conifers give upon hydrolysis and subsequent distillation approximately 2.1 per cent acetic acid, while a number of hardwoods give nearly three times as much. Klason relates the yield of acetic acid with the lignin content of the woods studied. It is further shown that a difference exists between the formulas for the naphthylamine salts of the alphalignosulphonic acids from soft and from hard woods.—C. J. W.

Lignosulphonic Acid. E. Hägglund. Svensk Pappers-Tidn. 36, no. 4:131-134 (Feb. 28, 1933).—Two lignosulphonic acids, which Klason designates as alpha and beta, result when wood is cooked with acid sulphites. Strong bisulphite cooking liquor high in alkali gives a sulphur-rich lignosulphonic acid (alpha), while the weaker liquor poorer in lime sulphonates less effectively (beta). Alpha-lignosulphonic acid is precipitated by salts of fine dispersion. The latter form is further characterized by its high degree of sulfonation, its ability to reduce Fehling solution, its power to combine with dissolved sulphur dioxide and its low methoxyl content, though it contains no carboxyl. The dissolving out of lignosulphonic acid from the solid phase is regulated by the pH of the solid lignosulphonic acid and may be looked upon as a hydrolysis.—C. J. W.

Mechanical Process

Pulp Grinder With Several Single Presses. Moritz Wolf, Steiermark, Austria. Ger. pat. 569, 388.—System of regulating the pressure on the individual presses.—J. F. O.

Process and Apparatus for the Treatment of Ground Wood from Pine Wood and Other Resinous Species of Wood. Harald Jensen & Bjorn Raeder, Aker. Nor. pat. 51,852 (March 6, 1931).—The stock coming from the grinder is freed from water as much as possible by pressing, in order to aid in the passage of the material through the extractor where it comes in contact with solvents such as carbon disulphide, ether, benzine, etc.—J. F. O.

Process for the Prevention of Sap Rot Fungus in Ground Wood. Gunnar Sundblad, Iggesund, Sweden. Nor. pat. 51,880 (Sept. 25, 1931).—The material is drenched in a disinfectant, such as, mercury salts, formaldehyde, aqueous sulphur dioxide, etc.—J. F. O.

Fibre Strength Aspects of Newsprint Manufacture. G. D. O. Jones, T. W. Ross and H. Wyatt Johnston. Pulp Paper Can. 34: 331-336 (May, 1933).—Three groundwoods and 1 sulphite, all of newsprint grade, were classified and the physical properties of all 4 pulps and their fractions measured. Relations were found to exist between fiber length, density, velocity of air transmission, time or drainage, tearing strength and breaking length. Evidence was secured indicating that fibrillation exists in all fractions of sulphite and groundwood. It appears probable that groundwoods can be designed for special uses, provided that fibers can be fibrillated without excessive size reduction and subsequently be screened carefully.—A. P.-C.

Continuous Pulp Grinder, Nezel Patent. G. Antonoff, Wochbl. Papierfabr. 64, No. 15: 259-60 (April 15, 1933).—Description of the Nenzel continuous pulp grinder.—J. F. O.

Tools for the Sharpening of Ground Wood Stones. A. Elsenhans, Essen. Finn. pat. 14,824 (Dec. 12, 1930).—J. F. O.

Great Northern's New Grinders. John J. O'Brien. Paper Mill 55, No. 49; 4 (Dec. 3, 1932).—A brief description of the new Great Northern two-pocket grinder 36 of which have replaced 105 of the old three-pocket type at the mill of the Great Northern Paper Co., Millinocket, Me.—A. P.-C.

Electric Motor Control System for Wood Grinders. The British Thomson-Houston Co., Ltd. Brit. pat. 380,-014 (April 13, 1932).—The stone is driven by a direct-connected synchronous motor and the wood feed by an auxiliary variable-speed, direct-current motor. The field winding of the latter is connected to be energised from the same alternating current circuit as the grinder motor through a controlled rectifier comprising a transformer and electric valves, connected for full-wave rectification. The grids of these valves are connected to the common cathode circuit through a current-limiting resistor, and opposite valves of the secondary winding of the grid transformer. In order to control the output of the rectifier in accordance with the load on the grinder motor, and thus control the excitation of the feed motor, an impedance phase-shifting circuit is provided, comprising a saturable reactor provided with a saturating winding and a resistor connected in series across the secondary winding of the transformer in the circuit of the field-winding of the feed motor. The saturating winding is energised through a rectifier bridge from the secondary winding of the current transformer.—A. P.-C.

Strong Groundwood from Pine. S. C. Foster. Paper Mill 55, No. 51: 10 (Dec. 17, 1932).—By compiling both laboratory and mill data relative to the control of the cooking and grinding processes the Bedford Pulp and Paper Co. succeeded in producing pine groundwood sufficiently strong to permit of making a 100 per cent groundwood sheet.—A. P.-C.

Newsprint Without the Addition of Chemical Pulp. Leopold Enge. Wochbl. Papierfabr, 64, No. 12; 206 (March 25, 1933).—The author describes his method for the production of newsprint without the addition of chemical pulp. The wood is ground under certain conditions and then treated with chemicals. Other patents on similar processes are reviewed.—J. F. O.

Character of Changes in the Fibre in the Process of Grinding. M. Resh and L. Kantor. Bum. Prom. 12, no. 1:53-60 (1933); C. A. 27: 3071.—In the mechanical grinding the fiber undergoes only physical changes, the swollen cellulose becoming more reactive.—C. J. W.

Artificial Defibering Stones. A. Malinovskii. Bum. Prom. 12, no. 1:15-20 (1933); C. A. 27:3071.—Somewhat better results are shown with the use of Norwegian stones than with the German products.—C. J. W.

Defibering Stones With Bakelite Binder. G. M. Zhornitzkii. Bum. Prom. 11, no. 11:62-63 (1932); C. A. 27:2576.—Defibering stones made from an abrasive material with bakelite binder gave good results.—C. J. W.

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Castle & Overton, Inc., Korsholm, Konigsberg, 2780 bls. wood pulp; J. Andersen & Co., Korsholm, Gothenburg, 250 bls. sulphite; Johaneson Wales & Sparre, Inc., Korsholm, Gothenburg, 125 bls. sulphate; Gottesman & Co. Inc., Korsholm, Gothenburg, 1500 bls. sulphate; Gottesman & Co. Inc., Korsholm, Halmstad, 750 bls. sulphite; J. Andersen & Co., United States, Oslo, 150 bls. sulphite; Price & Pierce, Ltd., Fagersten, Hernosand, 1800 bls. wood pulp; Castle & Overton, Inc., New York, Hamburg, 1520 bls. wood pulp, 304 tons; M. Sone, Justin, Bremen, 150 bls. wood pulp; Irving Trust Co., Justin, Bremen, 600 bls. wood pulp; J. Andersen & Co., Drottningholm, Gothenburg, 250 bls. sulphite; Johaneson Wales & Sparre, Inc., Drottningholm, Gothenburg, 381 bls. sulphite; Johaneson Wales & Sparee, Inc., Drottningholm, Gothenburg, 250 bls. sulphate; Atterbury Bros. Inc., Drottningholm, Gothenberg, 894 bls. dry soda pulp; Bulkley Dunton & Co., Strassa, ——, 1975 bls. wood pulp.

WOOD PULP BOARDS

Wilkinson Bros. & Co. Inc., Korsholm, Gothenburg, 50 bls.; Northern Trading Co., New York, Hamburg, 100 bls.

ALBANY IMPORTS

WEEK ENDING NOVEMBER 25, 1933

Tradesmans Natl Bank, Kolsnaren, Norrsundet, 5125 bls. sulphate; Gottesman & Co., Inc., Kolsnaren, Stockholm, 5400 bls. sulphite; J. Andersen & Co., Kolsnaren, Stockholm, 300 bls. sulphite; Bulkley Dunton & Co., Kolsnaren, ——, 2500 bls. wood pulp; Pagel Horton & Co. Inc., Kolsnaren, Gefle, 4750 bls. sulphite; ——, Kolsnaren, Helsingfors, 2281 bls. sulphite; Castle & Overton, Inc., Kolsnaren, Wiborg, 2508 bls. wood pulp; ——, Kolsnaren, Wiborg, 1785 bls. sulphite; Intl Paper Co., Bornholm, Newcastle, N. B., cargo pulp wood; Parsons & Whittemore, Inc., Pr. Harding, Hamburg, 2800 bls. sulphite, 508 tons.

BOSTON IMPORTS

WEEK ENDING NOVEMBER 25, 1933

Atkinson Haserick & Co., Pr. Adams, Genoa, 21 cs. wrapping paper; Brown Bros. Harriman & Co., Laconia, Liverpool, 11 cs. card waste; ——, Laconia, Liverpool, 226 bags hide cuttings; G. F. Malcolm Inc., Laconia, Liverpool, 6 cs. tissue paper; W. N. Proctor Co., Laconia, Liverpool, 2 cs. tissue paper; M. Sone, Hamm, Hamburg, 500 bls. wood pulp; Parsons & Whittemore, Inc., Artigas, ——, 280 bls. sulphite; Bulkley Dunton & Co., Tiradentes, ——, 3825 bls. wood pulp; Bulkley Dunton & Co., Bilderdyk, ——, 140 bls. wood pulp.

PORTLAND IMPORTS

WEEK ENDING NOVEMBER 25, 1933

E. M. Sergeant & Co., Fagersten, Hernosand, 450 bls. wood pulp; Gottesman & Co., Inc., Fagersten, Hernosand, 5592 bls. wood pulp; Price & Pierce, Ltd., Fagersten, Hernosand, 1350 bls. wood pulp; Bulkley Dunton & Co., Strassa, ——, 3100 bls. wood pulp.

PHILADELPHIA IMPORTS

WEEK ENDING NOVEMBER 25, 1933

Bank of N. Y. Trust Co., Cypria, Barcelona, 42 bls. rags; Castle & Overton, Inc., Korsholm, Kinigsberg, 2425 bls. wood pulp; Gilman Paper Co., Korsholm, Norrkoeping, 498 rolls news print; Perkins Goodwin & Co., Korsholm, Kothenburg, 1016 bls. sulphite; The Borregaard Co. Inc., Korsholm, Gothenburg, 159 rolls, 39 bls. paper; Gottesman & Co. Inc., Korsholm, Gothenburg, 600 bls. chemical pulp; Gottesman & Co. Inc., Korsholm, Halmstad, 2250 bls. sulphite; E. J. Keller Co. Inc., Exporter, ——, 38 bls. rags; E. J. Keller Co. Inc., Artigas, ——, 67 bls. rags; Bulkley Dunton & Co., Pajala, ——, 125 bls. wood pulp; Bulkley Dunton & Co., Tiradentes, ——, 250 bls. wood pulp.

CAMDEN IMPORTS

WEEK ENDING NOVEMBER 25, 1933

Bulkley Dunton & Co., Tiradentes, ——, 6000 bls. wood pulp.

BALTIMORE IMPORTS

WEEK ENDING NOVEMBER 25, 1933

Congoleum Nairn Co., Black Gull, Antwerp, 317 bls. rags; Congoleum Nairn Co., Liberty, Calais, 114 bls. rags; Congoleum Nairn Co., Liberty, Havre, 180 bls. rags; Manufacturers Trust Co., Sanyo Maru, Shanghai, 205 bls. bagging; E. M. Sergeant & Co., Fagersten Hernosand, 4500 bls. wood pulp; Price & Pierce, Ltd., Fagersten Hernosand, 4680 bls. wood pulp; Bulkley Dunton & Co., Tirandentes, ——, 1500 bls. wood pulp; Parsons & Whittemore, Inc., City of Newport News, ——, 250 bls. sulphite; Gottesman & Co. Inc., City of Newport News, Czecho Slovakia, 1397 bls. wood pulp.

NORFOLK IMPORTS

WEEK ENDING NOVEMBER 25, 1933

Keene & Arkus, Liberty, Calais, 107 bls. bagging.

NEWPORT NEWS IMPORTS

WEEK ENDING NOVEMBER 25, 1933

Bulkley Dunton & Co., Strassa, ——, 1485 bls. wood pulp.

HOUSTON IMPORTS

WEEK ENDING NOVEMBER 25, 1933

Irving Trust Co., Sanyo Maru, Kobe, 600 bls. bagging.

Single Motor Paper Machine Drive

The Allis-Chalmers Manufacturing Company, of Milwaukee, Wis., has just issued an illustrated leaflet describing its Single Motor Paper Machine Drive. The type of direct current machines employed and the system of speed variation and control are illustrated and briefly described in the bulletin.

For ordinary conditions the apparatus involved consists of the following;—A shunt wound direct current main driving motor, a direct current generator for supplying power to this motor, an exciter for supplying excitation of motor and generator and for synchronous motor when generator is so driven, a combined control panel for the motor and generator, a rocking contact type automatic speed regulator for maintaining constant motor speeds and a pilot generator.

New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, November 29, 1933.

Conditions in the local paper market are practically unchanged. Business is expected to improve, however, now that the Recovery Code for the Paper Industry has gone into effect. Sales forces of the leading paper organizations continue optimistic. Prices of the various grades of paper are generally holding up well.

The news print paper market is displaying a stronger undertone. The total North American production during October amounted to 300,904 tons, according to information gathered by the News Print Service Bureau. Stocks of news print at the mills on September 30 amounted to 57,406 tons.

Trading in the paper board market is moderately active. Box board operations are proceeding in fair volume. Prices are steady. The fine paper market is marking time. Tissues are going forward in good volume. The coarse paper market is showing improvement. No radical price changes have been reported.

Mechanical Pulp

The ground wood pulp market is in a sound statistical position. Offerings of both domestic and imported mechanical pulp are sufficient to take care of current requirements, although not excessive. Shipments against contract are fairly heavy. Prices are generally holding to formerly quoted levels.

Chemical Pulp

Although business in the chemical pulp market is rather quiet at present the outlook is considered promising, in most quarters. Naturally, the currency situation is creating some uncertainty. Prices of the various foreign and domestic grades of chemical pulp are well sustained.

Old Rope and Bagging

The old rope market is fairly steady for the time of year. Domestic and imported old manila rope are arousing slightly more interest. Small mixed rope is moving slowly. The bagging market is dull. Roofing bagging remains easy.

Rags

Some improvement was noticed in the domestic rag market. Demand for new cotton rags is slightly better, especially for No. 1 white shirt cuttings. Roofing grades are rather dull at present. Old domestic rags are listless. The imported rag market is still affected by the foreign exchange situation.

Waste Paper

Board mills are beginning to display a little more interest in the lower grades of paper stock. Strictly folded news and No. 1 mixed paper are moving in better volume than of late. The higher grades of waste paper are fairly steady, including soft and hard white shavings and book stock.

Twine

Demand for the various grades of twine is fairly satisfactory. Supplies are moving into consumption in good volume and the movement should continue until after the Yuletide holidays, at least. Prices are generally steady and unchanged, despite the usual keen competition.

Paper Mill Employment Gains

There was a general increase in both employment and payrolls in the paper and pulp and paper box plants in September over both August and over September of last year according to the Bureau of Labor Statistics, Department of Labor.

Reports were received by the Bureau from 416 paper and pulp mills which gave their September employment at 100,844 an increase of 5.7 per cent over August and of 26.7 per cent over September of last year. The average weekly September payrolls in these plants were $1,898,912, an increase of 1.9 per cent over August and of 34.4 per cent over September of last year.

The Bureau also received reports from 322 paper box factories which gave their September employment at 27,737 an increase of 5.6 per cent over August and of 30.2 per cent over September, 1932. The average weekly September payrolls in these plants were $493,977, an increase of 6.8 per cent over August and of 29.3 per cent over September of last year.

Albany To Profit by Russian Trade

ALBANY, N. Y., November 27, 1933.—Increased benefits from foreign commerce to the Port of Albany because of the recognition of Russia is prophesied by Howard Maywalt, local manager of Freidman & Slater, customs brokers and ship agents. It is his belief that a material expansion in Russian trade will follow if the present local duties at the port are not increased. He believes that there is a wide field for American exports and Russian imports and that the slightest increase in business will show a very substantial boom in the trade at the local terminal. He pointed to the fact that there has been a steady improvement of pulpwood cargoes from Russian markets in the past several years and virtually all of the ships have been forced to remain here several days because of the size of the shipments. Representatives of the Amtorg Trading Corporation, are frequently in this city in connection with the foreign shipments and they also have predicted an expansion in business under favorable conditions.

Eastern Paper Salesmen Meet

The Code of Fair Competition for the Paper and Pulp Industry, which is now in effect, was freely discussed at the regular weekly luncheon and meeting of the Eastern Division of the Salesmen's Association of the Paper Industry, held at the Hotel Woodstock, New York, on Monday last. There was a satisfactory attendance.

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, November 29, 1933.

BLANC FIXE.—Steadiness prevails in the blanc fixe market. The contract movement is well up to average. The pulp is still quoted at from $42.50 to $45.00 per ton, in bulk; while the powder is selling at from 3½ to 3¾ cents per pound, in barrels, at works.

BLEACHING POWDER.—The position of the bleaching powder market is practically unchanged. Demand is fairly active. Shipments against contract are moving with regularity. Bleaching powder is quoted at from $1.90 to $2.15 per 100 pounds, in drums, at works.

CASEIN.—The casein market is moderately active. Domestic standard ground is quoted at 12½ cents and finely ground at 13½ cents per pound. Argentine standard ground is selling at 15½ cents and finely ground at 15¾ cents per pound, all in bags, car lot quantities.

CHINA CLAY.—Conditions in the china clay market are fairly satisfactory. Prices are generally holding to schedule. Imported china clay is selling at from $12 to $17 per ton, ship side; while domestic paper making clay is selling at from $5 to $12 per ton, at mine.

CHLORINE.—The chlorine market is firmer. Contract shipments are going forward to the paper mills in good volume. Prices are steady. Chlorine is quoted at from $2.00 to $2.25 per 100 pounds, in tanks, or multi-unit cars, in ton lots, or over, at works.

CAUSTIC SODA.—Demand for caustic soda is improving. The contract movement is well up to average. Solid caustic soda is still quoted at from $2.60 to $3.10; while the flake and the ground are selling at from $3.00 to $3.05 per 100 pounds, in large drums, at works.

ROSIN.—The rosin market is marking time. The grades of gum rosin used in the paper mills are quoted at from $5.10 to $5.15 per 280 pounds, in barrels, at works; while wood rosin is selling at $4.00 per 280 pounds, in barrels, at southern shipping points.

SALT CAKE.—Firmness prevails in the salt cake market. Prices are well sustained. Salt cake is quoted at from $14 to $14.50; chrome salt cake at from $13.50 to $14 per ton, at works; while imported salt cake is selling at from $14 to $14.50 per ton, on dock.

SODA ASH.—The soda ash market is displaying strength. Contract shipments are moving in fairly heavy volume. Prices are firm. Quotations on soda ash, in car lots, at works, per 100 pounds, are as follows: in bulk, $1.10; in bags, $1.40; and in barrels, $1.50.

STARCH.—Trading in the starch market is fairly brisk. The contract movement is normal for the season. Prices remain unchanged. Special paper making starch is quoted at $2.67 per 100 pounds, in bags; and at $2.95 per 100 pounds, in barrels, at works.

SULPHATE OF ALUMINA.—Quotations in the sulphate of alumina market have advanced. The contract movement is seasonal. Commercial grades are now quoted at from $1.35 to $1.50; while iron free is selling at from $1.90 to $2.05 per 100 pounds, in barrels, at works.

SULPHUR.—The sulphur market is steady. Sulphur is quoted at $18 per long ton, on orders of 1,000 tons, or over, on yearly contracts; and at $20 per ton on any smaller quantity over that period. On spot and near by car loads, the quotation is $21 per ton.

TALC.—No radical changes transpired in the talc market during the past week. Prices are holding to schedule. Domestic talc is quoted at from $16 to $18 per ton, in bulk, at eastern mines; while imported talc is selling at from $23 to $30 per ton, on dock.

Market Quotations

Paper

(F. o. b. Mill)

Ledgers	6.50	@	—
Bonds	6.00	@	—
Index	6.00	@	—
Writings—			
Extra Superfine	6.50	@	—
Superfine	6.25	@	—
Tub sized	5.75	@	—
Engine sized	5.50	@	—
Book, Cased—			
S. & S. C.	5.50	@	—
S. & S. C. Litho.	5.75	@	—
M. F.	5.25	@	—
Coated and Enamel	6.15	@	9.30
Coated Litho	6.90	@	—
Tissues—Per Ream—			
White No. 1	.60	@	.80
White No. 2	.55	@	.70
Anti Tarnish M. G. only	.75	@	.80
Colored	.80	@	1.00
Kraft	.75	@	.80
Manila	.65	@	.70
Manila—			
No. 1 Jute	9.00	@	9.25
No. 2 Jute	7.75	@	8.50
No. 1 Wood	4.00	@	5.25
No. 2 Wood	3.50	@	4.00
Butchers	3.37½	@	—
Fibre Papers—			
No. 1 Fibre	4.25	@	5.50
No. 2 Fibre	4.00	@	4.75
Common Bogus	1.50	@	3.00
Screenings	2.00	@	3.00
Card Middles	4.00	@	5.00
Glassine—			
Bleached, basis 25 lbs., No. 1	.11	@	—
No. 2	.10	@	—
Bleached, basis 20 lbs.	.13	@	—

(Delivered New York)

News, per ton—			
Roll, contract	40.00	@	—
Rolls, spot	40.00	@	—
Sheets	45.00	@	—
Side Runs	25.00	@	—
Kraft—			
No. 1 Domestic	4.75	@	5.00
No. 2 Domestic	3.87½	@	—
Southern	3.87½	@	—
Imported	Nominal		
Boards—per ton—			
News	45.00	@	50.00
Chip	42.50	@	47.50
Binders Boards	68.00	@	72.00
Kraft Liner	75.00	@	85.00
Standard 85 Test Jute Liner	50.00	@	55.00
Sgl. Mla. Ll. Chip	52.50	@	55.00

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—			
Moist	27.50	@	29.00
Dry	28.00	@	29.50

(F.o.b. Mill)

No. 1 Domestic and Canadian	24.00	@	28.00

Chemical Pulp

(On Dock, Atlantic Ports)

Sulphite (Imported)—			
Bleached	2.80	@	3.00
Easy Bleaching	2.15	@	2.30
No. 1 strong unbleached	2.15	@	2.25
Mitscherlich Unbleached	2.15	@	2.25
No. 2 Strong unbleached	2.00	@	2.05
No. 1 Kraft	1.75	@	1.85
No. 2 Kraft	1.60	@	1.70
Sulphate—			
Bleached	2.75	@	3.25

(F. o. b. Pulp Mill)

Sulphite (Domestic and Canadian)—			
Bleached	2.50	@	3.75
Easy Bleaching	2.05	@	2.15
News	1.90	@	2.00
Mitscherlich unbleached	2.25	@	2.50
Kraft (Domestic)	1.60	@	2.75
Soda Bleached	2.50	@	—

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1.	6.50	@	7.00
Silesias No. 1	4.25	@	4.50
New Unbleached	6.75	@	7.25
New Soft Blacks	3.00	@	3.25
Blue Overall	4.00	@	4.25
Fancy	2.50	@	2.75
Washables	1.75	@	2.00
Mixed Khaki Cuttings	3.00	@	3.25
O. D. Khaki Cuttings	3.75	@	4.00
Men's Corduroy	1.50	@	1.75
New Mixed Blacks	2.50	@	2.75

Old Rags

White, No. 1—			
Repacked	3.00	@	3.50
Miscellaneous	2.75	@	3.25
White, No. 2—			
Repacked	1.75	@	2.25
Miscellaneous	1.50	@	1.75
Thirds and Blues—			
Repacked	1.50	@	1.75
Miscellaneous	1.25	@	1.50
Black Stockings	2.50	@	3.00
Roofing Rags—			
No. 1	.65	@	.70
No. 2	.50	@	.60
No. 3	.40	@	.50
No. 4	.35	@	.40
No. 5A	.30	@	.35

Foreign Rags

New Rags

New Dark Cuttings	1.50	@	1.60
New Mixed Cuttings	1.60	@	1.70
New Light Silesias	3.50	@	3.75
Light Flannelettes	3.25	@	3.50
Unbleached Cuttings	5.75	@	6.00
New White Cuttings	5.50	@	6.00
New Light Oxfords	3.25	@	3.50
New Light Prints	2.75	@	3.00

Old Rags

No. 1 White Linens	7.50	@	8.00
No. 2 White Linens	6.50	@	7.00
No. 3 White Linens	4.50	@	5.00
No. 4 White Linens	2.25	@	2.50
No. 1 White Cotton	3.75	@	4.00
No. 2 White Cotton	3.00	@	3.25
No. 3 White Cotton	2.50	@	2.75
No. 4 White Cotton	1.60	@	1.75
Extra Light Prints	2.00	@	2.25
Ord. Light Prints	1.75	@	1.85
Med. Light Prints	1.55	@	1.65
Dutch Blue Cottons	1.65	@	1.80
French Blue Linens	2.10	@	2.25
German Blue Linens	1.85	@	2.00
German Blue Cottons	1.50	@	1.60
Checks and Blues	1.30	@	1.40
Lindsay Garments	1.10	@	1.15
Dark Cottons	1.00	@	1.10
Old Shopperies	.85	@	.90
New Shopperies	.80	@	.85
French Blues	1.50	@	1.65

Old Rope and Bagging

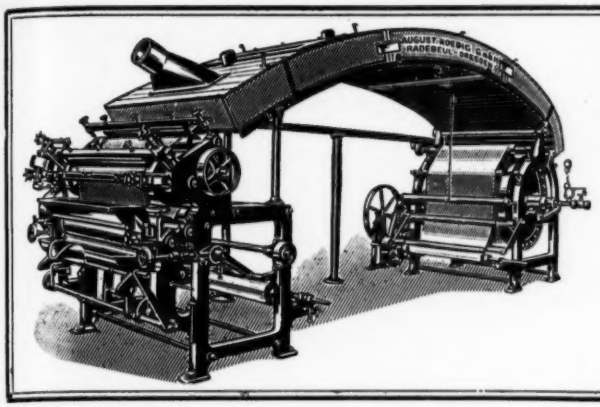
(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—			
Foreign	1.30	@	1.40
Domestic	1.25	@	1.35
Wool Tares, light	1.05	@	1.15
Wool Tares, heavy	1.05	@	1.15
Bright Bagging	1.00	@	1.10
Manila Rope—			
Foreign	2.50	@	2.75
Domestic	2.50	@	2.75
Small Mixed Rope	1.10	@	1.35
New Burlap Cut	1.50	@	1.75
Hessian Jute Threads—			
Foreign	2.60	@	2.75
Domestic	2.80	@	3.00

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	2.50	@	2.60
Ordinary Hard White No. 1	2.25	@	2.35
Hard White No. 2	2.10	@	2.20
Soft White No. 1	2.00	@	2.10
Flat Stock—			
Stitchless	.95	@	1.05
Overissue Mag.	.95	@	1.05
Solid Flat Book	.75	@	.85
Crumpled No. 1	.60	@	.70
Solid Book Ledger	1.60	@	1.85
Ledger Stock	.95	@	1.05
New B. B. Chips	.30	@	.35
Manilas—			
New Env. Cut	1.50	@	1.60
New Cuttings	1.10	@	1.20
Extra No. 1 old	.75	@	.85
Print	Nominal		
Bogus Wrapper	.40	@	.50
Container	Nominal		
Old Kraft Machine—			
Compressed bales	1.10	@	1.20
News—			
No. 1 White News	1.10	@	1.20
Strictly Overissue	.60	@	.65
Strictly Folded	.45	@	.55
No. 1 Mixed Paper	.28	@	.33



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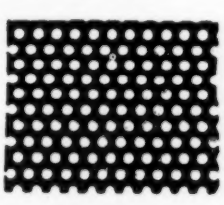

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Twines
(F. o. b. Mill)

Cotton—			
B. C. 18 basis	.30	@	.32
No. 1	.20	@	.22
No. 2	.19	@	.20
No. 3	.17	@	.18
A. Italian, 18 basis	.36	@	.37
Finisned Jute—			
Dark, 18 basis	.18	@	.20
Light, 18 basis	.20	@	.22
Jute Wrapping, 3-6 Ply—			
No. 1	.15½	@	.16¼
No. 2	.15	@	.16
Tube Rope—			
4-ply and larger	.09¾	@	.11¾
Fine Tube Rope—			
4-ply	.13¼	@	.14¾
3-ply	.14¼	@	.14¾
2-ply	.15¼	@	.15¾
Paper Makers Twine	.08¾	@	.10¾
Box Twine, 2-3 ply	.12¼	@	.13½
White Hemp	.12¼	@	.13¾
Java Sisal—			
No. 1 Basis	.11½	@	—
No. 2 Basis	.10½	@	—
New Zealand Sisal	.11½	@	—
Sisal Lath Yarn—			
No. 1	.13½	@	.15½
No. 2	.11½	@	.13½
Manila Twine	.24½	@	.29½

CHICAGO

Paper
(F. o. b. Mill)

Bag Bond	.30	@	.53¼
Water Marked Sulphite Bond	.09	@	.12
Sulphite Bond	.04	@	.11
Superfine Writing	.18	@	.24
No. 1 Fine Writing	.14	@	.18
No. 2 Fine Writing	.12	@	.14
No. 3 Fine Writing	.07	@	.18
No. 1 M. F. Book	.06½	@	.07¼
No. 2 M. F. Book	.05¼	@	.06¼
No. 1 S.&S.C. Book	.06¾	@	.07¾
No. 2 S.&S.C. Book	.05¾	@	.06½
Coated Book	.07½	@	.12
Coated Label	.07½	@	.10
No. 1 Manila	.04¼	@	.05¾
No. 1 Fibre	.04¾	@	.05¼
No. 2 Manila	.04¼	@	.04¾
Butcher's Manila	.03¼	@	.03¾
No. 1 Kraft	3.50	@	4.50
Southern Kraft	2.62½	@	—
No. 2 Kraft	2.62½	@	—
Wood Tag Boards	.04¼	@	.05¼
Sulphite Screenings	.03	@	.03¼
Manila Tissue	.07	@	.07¼
White Tissue	.07¼	@	.07½

(Delivered Central Territory)

News, per ton—			
Rolls, contract	45.00	@	—
Sheets	50.00	@	—
Boards, per ton—			
Plain Chip	37.50	@	—
Solid News	43.50	@	—
Manila Lined Chip	47.50	@	—
Patent coated	55.00	@	—
Container Lined—			
85 Test	60.00	@	65.00
100 Test	60.00	@	70.00

Old Papers
(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope cuttings	1.70	@	1.80
No. 1 Hard White	1.40	@	1.50
No. 1 Soft White	1.20	@	1.30
Ledger & Writings	.80	@	.90
Solid Books	.80	@	.90
Blanks	1.00	@	1.05
Kraffs	.90	@	1.00
New Kraft Cuts	1.20	@	1.30
Manila Env. Cuts	1.25	@	1.30
Ex. No. 1 Manila	1.00	@	1.05
Print Manila	.60	@	.65
Overissue News	.60	@	.70
Old Newspapers—			
No. 1	.55	@	.65
Mixed Papers—			
No. 1	.50	@	.55
Roofing Stocks—			
No. 1	30.00	@	—
No. 2	28.00	@	—

PHILADELPHIA

Paper
(F. o. b. Mill)

Bonds	.04	@	.40
Ledgers	.06	@	.40
Writings—			
Superfine	.10	@	.18
Extra Fine	.15	@	.26
Fine	.15	@	.26
Fine, No. 2	.10	@	.25
Fine No. 3	.05½	@	.18
Book, M. F.	.04¾	@	.07
Book, S. S. & C.	.05	@	.07½
Book, Coated	.06	@	.16
Coated Lithograph	.06	@	.11
Label	.07	@	.11
No. 1 Jute Manila	.06	@	.10
Manila Sul., No. 1	.03	@	.06
Manila No. 2	.03	@	.05
No. 1 Kraft	.05¼	@	.06½
No. 2 Kraft	.03¾	@	.05
Southern Kraft	2.75	@	4.00
Common Bogus	.03	@	.04½

(Delivered Philadelphia)

News Print Rolls	46.00	@	55.00
Straw Board	40.00	@	45.00
News Board	37.00	@	45.00
Chip Board	40.00	@	45.00
Wood Pulp Board	70.00	@	85.00
Binder Boards—			
No. 1, per ton	75.00	@	80.00
No. 2, per ton	70.00	@	75.00
Carload lots	65.00	@	70.00
Tarred Felts—			
Regular	52.25	@	54.25
Slaters (per roll)	.84	@	.94
Best Tarred, 1-ply (per roll)	1.95	@	2.10
Best Tarred, 2-ply (per roll)	1.50	@	1.60
Best Tarred, 3-ply	2.00	@	2.25

Domestic Rags (New)
(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1	.03½	@	.04
New White, No. 2	.02½	@	.04
Light Silesias	.02½	@	.03
Silesias, No. 1	.03	@	.03½
Black Silesias, soft	.02½	@	.03
New Unbleached	.05	@	.05½
Washable, No. 1	.01½	@	.02
Blue Overall	.03½	@	.04
Cottons—According to grades—			
Washable, No. 2	.02½	@	.03
New Blue	.01½	@	.03
Fancy	.01½	@	.03
New Black Soft	.02	@	.04
New Light Seconds	.01½	@	.02
New Dark Seconds	1.50	@	1.75
Khaki Cuttings—			
No. 1 O.D.	.03	@	.04
No. 2 Mixed	.03	@	.04
Corduroy	.02	@	.03
New Canvas	.03½	@	.04½
New Black Mixed	.02½	@	.03½

Domestic Rags (Old)

White No. 1—			
Repacked	2.50	@	3.50
Miscellaneous	1.75	@	2.25
M. G.	3.00	@	3.75
Thirds and Blues—			
Miscellaneous	1.00	@	1.50
Repacked	1.50	@	2.00
Black Stockings (Export)	2.00	@	3.50
Roofing Stock—			
Foreign No. 1	.50	@	.75
Repacked	.70	@	.85

Bagging
(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.25	@	1.50
Domestic	1.50	@	1.75
Manila Rope	2.00	@	2.25
Sisal Rope	1.25	@	1.50
Mixed Rope	1.00	@	1.10
Scrap Burlaps—			
No. 1	1.25	@	1.50
No. 2	.80	@	1.00
Wool Tares, heavy	2.75	@	—
Mixed Strings	1.15	@	1.25
No. 1 New Light Burlap	2.25	@	2.50
New Burlap Cuttings	2.00	@	2.25

Old Papers
(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	2.30	@	2.40
No. 2 Hard White	2.10	@	2.15
No. 1 Soft White	2.05	@	2.10
No. 2 Soft White	1.15	@	1.25
No. 1 Mixed	.95	@	1.00
No. 2 Mixed	.75	@	.80
Solid Ledger Stock	1.50	@	1.60
Writing Paper	1.05	@	1.10
No. 1 Books, heavy	.90	@	1.00
No. 2 Books, light	.75	@	.85
No. 1 New Manila	1.20	@	1.50
No. 1 Old Manila	.85	@	.90
Print Manila	.75	@	.80
Container Manila	.75	@	85
Old Kraft	.90	@	1.05
Common Paper	.35	@	.45
No. 1 Mixed Paper	.35	@	.40
Straw Board Chip	.35	@	.40
Binders Board Chip	.35	@	.40
Corrugated Board	.50	@	.60
Overissue News	.55	@	.65
Old Newspapers	—	@	.45

BOSTON

Paper
(F. o. b. Mill)

Ledgers—			
Sulphite	.06	@	.12½
Rag Content	.12	@	.30
All Rag	.36	@	.52½
Bonds—			
Sulphite	.05½	@	.11
Rag Content	.12	@	.30
All Rag	.36	@	.65
Writings	.06½	@	.20
Superfines	.11	@	.31
Book, Super	.06	@	.09
Book, M. F.	.05½	@	.08½
Book, Coated	.08½	@	.18
Coated Litho	.09	@	.12
Label	.09½	@	.15
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¾	@	.06¾
Manila, Sul. No. 2	.03¾	@	.04½
No. 1 Kraft	.04¼	@	.05
No. 2 Kraft	.03½	@	.04½

(F. o. b. Boston)

Southern Kraft	.03½	@	.04½

(F. o. b. destination in carload lots, f. o. b. mill in less than carload lots.)

Common Bogus	.02	@	.02¼

(Delivered New England points)

News Print, rolls	44.50	@	—
Straw Board, rolls	.009	@	35.00
Straw Board in Sheets, basis 35s to 70s	—	@	40.00
Filled News Board	45.00	@	50.00
Chip Board	42.50	@	47.00
Chip Board (Creasing)	45.00	@	—
Single Manila Lined Chip	52.50	@	62.50
Single White, Patent Coated News Board—			
Bender	62.50	@	72.50
Wood Pulp Board	70.00	@	75.00
Binder Boards	62.00	@	75.00

Old Papers
(F. o. b. Boston)

Shavings—			
No. 1 Hard White	2.40	@	—
No. 1 Soft White	2.10	@	—
No. 1 Mixed	.80	@	.90
No. 2 Mixed	.75	@	.80
Solid Ledger Books	1.40	@	1.50
Overissue Ledger Stock	1.15	@	1.30
Mixed Ledgers	1.00	@	1.10
No. 1 Books, heavy	.85	@	.95
No. 1 Books, light	.65	@	.75
Crumpled Stitchless Book Stock	.50	@	.60
Manila Env. Cuttings	1.25	@	1.30
No. 1 Old Manila	.95	@	1.05
White Blank News	1.15	@	1.25
No. 1 Kraft	—	@	1.00
Manila	.75	@	.80
No. 1 Mixed Papers	.20	@	.25
Print Manila	.45	@	.50
Overissue News	.55	@	.60
Old Newspapers	.37½	@	.42½
Box Board Chips	.32½	@	.35
Corrugated Boxes	.27½	@	.35
Screening Wrappers	.60	@	.70

Bagging
(F. o. b. Boston)

Manila Rope—			
Foreign	—	@	2.25
Domestic	—	@	2.50
Transmission Rope	1.50	@	—
Mixed Strings	—	@	.60
Jute Rope	1.00	@	1.15
Jute Carpet Threads	.65	@	.70
Gunny No. 1—			
Foreign	1.50	@	1.60
Domestic	1.00	@	1.10
Bleachery Burlap	3.00	@	3.25
No. 1 Scrap Burlap	1.40	@	—
Scrap Sisal	1.10	@	1.15
Scrap Sisal for shredding	1.15	@	1.30
Wool Tares, heavy	—	@	1.05
New Burlap Cuttings	1.15	@	1.25
Australian Wool Pouches	2.25	@	2.50
Heavy Baling Bagging	1.50	@	1.60
Paper Mill Bagging	—	@	.75
Bagging No. 2	.50	@	.60

Domestic Rags (New)
(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.02	@	.02¼
New White No. 1	.06½	@	—
New White No. 2	.04½	@	.05
Silesias No. 1	.04	@	—
New Black Silesias	.02½	@	.03
New Unbleached	.07	@	.07¼
Blue Cheviot	—	@	4.65
Fancy	—	@	.02¼
Washable	.02¼	@	—
Cottons—According to grades—			
Blue Overalls	—	@	.03¾
New Black, soft	.04	@	04¼
Khaki Cuttings	.03	@	.03¼
O. D. Khaki	.03	@	.03¾
Corduroy	.01¾	@	.02
New Canvas	—	@	.05
B.V.D. Cuttings	—	@	.06¾

Domestic Rags (Old)
(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	3.00	@	3.50
Miscellaneous	2.00	@	—
White No. 2—			
Repacked	.01½	@	.01¾
Miscellaneous	.01½	@	.01¾
Twos and Blues	1.25	@	1.50
Thirds and Blues			
Repacked	1.10	@	1.25
Miscellaneous	.85	@	.90
Black Stockings	2.25	@	2.50
Roofing Stock—			
No. 1	.60	@	.65
No. 2	.55	@	.60
No. 3	.35	@	.45

Foreign Rags
(F. o. b. Boston)

Dark Cottons	1.10	@	—
New White Shirt Cuttings	5.50	@	6.50
Dutch Blues	2.00	@	2.50
New Checks & Blues	2.50	@	3.00
Old Fustians	1.55	@	1.60
Old Linsey Garments	—	@	1.10

TORONTO

Paper
(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.09¾	@	—
No. 2 Sulphite	.08	@	—
No. 1 Colored	.10¼	@	—
No. 2 Colored	.08½	@	.10½
Ledgers (sulphite)			
Ledgers, No. 1	.34½	@	—
Ledgers, No. 2	.25½	@	—
Writing	.09	@	.09½
Book—			
No. 1 M. F. (Carloads)	6.20	@	—
No. 3 M. F. (Carloads)	5.70	@	—
No. 4 M. F. (carloads)	4.75	@	—
No. 1 S. C. (carloads)	6.65	@	—
No. 3 S. C. (carloads)	6.20	@	—
No. 4 S. C. (carloads)	5.20	@	—
No. 1 Coated and Litho	12.00	@	—
No. 2 Coated and Litho	10.50	@	—
No. 3 Coated and Litho	9.50	@	—
Coated tinted	14.00	@	—
Wrapping—			
Rag Brown	4.25	@	—
White Wrap	2.22½	@	—
"B" Manila	4.75	@	—
No. 1 Manila	5.25	@	—
Fiber	5.25	@	—
Kraft, M. F.	5.75	@	—
Kraft No. 2	5.25	@	—

(F.O.B. Cars Toronto)

News, per ton—			
Rolls (contract)	45.50	@	—
Sheets	50.50	@	—

Pulp
(F. o. b. Mill)

Ground Wood	18.00	@	20.00
Sulphite easy bleaching	40.00	@	—
Sulphite, news grade	38.00	@	—
Sulphite, bleached	50.00	@	55.00
Sulphate	50.00	@	—

Old Waste Paper
(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	2.00	@	2.10
Soft White	1.60	@	1.90
White Blk. News	1.25	@	1.50
Book and Ledger—			
Flat Magazine and Book Stock (old)	.90	@	1.00
Light and Crumpled Book Stock	.80	@	.90
Ledgers and Writings	1.00	@	1.05
Manilas—			
New Manila Cut	1.25	@	1.50
Printed Manilas	.70	@	—
Kraft	1.25	@	1.50
News and Scrap—			
Strictly Overissue	1.00	@	—
Strictly Folded	.70	@	—
No. 1 Mixed Paper	.60	@	—

Domestic Rags
(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.05¼	@	.05½
Fancy Shirt Cuttings	.02¼	@	.02½